

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

JO 7110.65Z CHG 3

Air Traffic Organization Policy

Effective Date: November 3, 2022

SUBJ: Air Traffic Control

1. Purpose of This Change. This change transmits revised pages to Federal Aviation Administration Order JO 7110.65Z, 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 website 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 that has editorial corrections and changes submitted through normal procedures. The Briefing Guide lists only new or modified material, along with background.

5. Distribution. This change is distributed to 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 Retain this transmittal until superseded by a new basic order.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.

Michele Merkle Acting Vice President, Mission Support Services Air Traffic Organization

Explanation of Changes Change 3

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

a. 1-2-1. WORD MEANINGS

This change replaces the specific term radar with ATC Surveillance Source, Surveillance Source Service Volume, Department of Homeland Security or DoD Unit, as surveillance options when conducting flight operations in accordance with "due regard" or "operational." This change also adds Department of Defense (DoD) references applicable to the paragraph.

b. 2-1-29. RVSM OPERATIONS

This change adds the definition of Reduced Vertical Separation Minimum (RVSM) airspace to FAA Order JO 7110.65, paragraph 2–1–29, RVSM Operations, based on those found in other FAA orders.

c. 2–6–2. PIREP SOLICITATION AND DIS-SEMINATION

This change adds the phrase "less than good" to subparagraph a7 of paragraph 2–6–2, PIREP Solicitation and Dissemination.

d. 3–1–5. VEHICLES/EQUIPMENT/PER-SONNEL NEAR/ON RUNWAYS

This change provides a reference to FAA Order JO 7210.3, Facility Operations and Administration, to help increase awareness that an LOA is required for operations in an RSA. This change adds the words "when established in a Letter of Agreement," and "in the Runway Safety Area (RSA)" to the current paragraph along with a reference to FAA Order JO 7210.3, paragraph 4–3–1, Letters of Agreement. In addition, this change removes "when necessary" and "Provide advisories as specified in paragraph 3–1–6, Traffic Information, and paragraph 3–7–5, Precision Approach Critical Area, as appropriate", which are redundant. It also changes "the control tower" to "ATC" and "direct communications" to "two-way communications" to conform with conventions established in this order. Finally, it removes "active" when describing the runway, and inserts the qualifying phrase "which includes when aircraft are arriving, departing, or taxiing along the

runway" to make it explicitly clear that this activity may be authorized during those times. Language associated with providing advisories is removed as it is covered in another section of this order. This change cancels and incorporates N JO 7110.785, which was effective September 30, 2022.

e. 3–1–13. ESTABLISHING TWO–WAY COMMUNICATIONS

To ensure consistent use of defined terms in communications with flight operators, the single instance of the term "Class D services" is replaced with "airport traffic control service."

f. 3-5-1. SELECTION

This change clarifies responsibilities associated with selecting active runway(s). The final authority for determining runway(s) in use rests with the Airport Traffic Control Tower (ATCT) supervisor/ controller-in-charge (CIC). This change emphasizes that tailwind and crosswind considerations take precedence over delay/capacity considerations and noise abatement operations/procedures/agreements. This change also cancels and incorporates N JO 7110.783, which was effective June 10, 2022.

g. 3–7–5. PRECISION APPROACH CRITI-CAL AREA

This change revises the note in subparagraph a. It now articulates an expectation to take action to update the official weather observation when weather conditions are changing from visual flight rules (VFR) to instrument flight rules (IFR) and are deteriorating, using all available weather sources, including pilot reports and controller observation and includes a reference to JO 7110.65, paragraph 2–6–3, for reporting weather conditions.

h. 5–8–3. SUCCESSIVE OR SIMULTANE-OUS DEPARTURES

This change introduces new simultaneous departure standards when runways centerlines are less than 2,500 feet. When conducting operations using these new procedures, both aircraft must be flying an RNAV Standard Instrument Departure (SID) procedure, and adhere to the standards stated in TBL 5–8–1.

i. 7-4-1. VISUAL APPROACH

This change adds content to explicitly spell out the pilot's expectations for terrain and obstacle avoidance when aircraft are either instructed to remain within the traffic pattern or as otherwise directed by air traffic control (ATC).

j. 7–4–4. APPROACHES TO MULTIPLE RUNWAYS

This change replaces the term "final approach course" with "extended runway centerline" for consistency purposes and aligns subparagraph c3 with the format and layout of subparagraph c2 for more concise readability and understanding without changing any procedural aspects.

k. 7–7–3. SEPARATION 7–7–7. TRSA DEPARTURE INFORMA-TION

This change adds the word "participating" in paragraph 7–7–3 to clarify that the guidance only applies to participating visual flight rules (VFR) aircraft and adds the words "and other participating VFR aircraft" to eliminate confusion. The change also restructures subparagraph 7–7–7c for clarity and to align with terminology found in the

Aeronautical Information Manual and the Pilot/ Controller Glossary.

I. 9-3-2. SEPARATION MINIMA

This change harmonizes the language in FAA Order JO 7110.65, paragraph 9–3–2, with guidance in FAA Order JO 7210.3, paragraph 2–1–18, regarding exceptions to required separation between nonparticipating aircraft and special use airspace.

m. Editorial Changes

Editorial changes include the addition of the term "calibrated airspeed" to clarify a note in subparagraph 5–7–3a, the addition of subparagraph 3–1–8c to clarify the application of procedures and phraseology for the wind shear detection system, the removal of references to visual or vertical as examples of approved separation in subparagraph 5–5–4b2 Note, defining PIREP in paragraph 1–2–6, Abbreviations, the addition of clarifying phraseology in subparagraph 2–1–21a7, replacing the phrase "standard radar separation" with "approved radar separation" in a note in subparagraph 13–1–2c, and removing two references to Center Radar Presentation (CENRAP) in subparagraph 2–3–4d.

n. 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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Section 2. Terms of Reference

1–2–1. WORD MEANINGS

As used in this order:

a. "Shall" or "must" means a procedure is mandatory.

b. "Shall not" or "must not" means a procedure is prohibited.

c. "Should" means a procedure is recommended.

d. "May" or "need not" means a procedure is optional.

e. "Will" means futurity, not a requirement for the application of a procedure.

f. Singular words include the plural.

g. Plural words include the singular.

h. "Aircraft" means the airframe, crew members, or both.

i. "Approved separation" means separation in accordance with the applicable minima in this order.

j. "Altitude" means indicated altitude mean sea level (MSL), flight level (FL), or both.

k. "Miles" means nautical miles unless otherwise specified, and means statute miles in conjunction with visibility.

I. "Course," "bearing," "azimuth," "heading," and "wind direction" information must always be magnetic unless specifically stated otherwise.

m. "Time" when used for ATC operational activities, is the hour and the minute in Coordinated Universal Time (UTC). Change to the next minute is made at the minute plus 30 seconds, except time checks are given to the nearest quarter minute.

n. "Runway" means the runway used by aircraft and, unless otherwise specified, does not include helipads and/or their accompanying takeoff/landing courses. (See Pilot/Controller Glossary terms – Runway and Helipad.)

o. Flight operations in accordance with the options of "due regard" or "operational" have the following requirements:

1. Obligates the authorized state aircraft commander to:

(a) Separate his/her aircraft from all other air traffic; and

(b) Assure that an appropriate monitoring agency assumes responsibility for search and rescue actions; and

(c) Operate under at least one of the following conditions:

(1) In visual meteorological conditions (VMC); or

(2) Within an area that is covered by an ATC surveillance source and in communications with ATC, or within surveillance source service volume and radio communications range of a facility, Department of Homeland Security or DoD unit capable of providing the pilot assistance to operate with due regard to other aircraft; or

(3) Be equipped with airborne radar that is sufficient to provide separation between his/her aircraft and any other aircraft he/she may be controlling and other aircraft; or

(4) Operate within Class G airspace.

2. An understanding between the pilot and controller regarding the intent of the pilot and the status of the flight should be reached before the aircraft leaves ATC frequency.

NOTE-

1. A pilot's use of the phrase "Going Tactical" does not indicate "Due Regard."

2. The above conditions provide for a level of safety equivalent to that normally given by International Civil Aviation Organization (ICAO) ATC agencies and fulfills U.S. Government obligations under Article 3, paragraph d, of the Chicago Convention of 1944, which stipulates there must be "due regard for the safety of navigation of civil aircraft" when flight is not being conducted under ICAO flight procedures.

REFERENCE-

DoD Instruction (DODI) 4540.1, Enclosure 3, Para 3c(1)(c). DoD Flight Information Publication (FLIP), Section 8–6c(1).

p. "CFR" means Code of Federal Regulations.

FIG 1–2–1 Divergence



1-2-2. COURSE DEFINITIONS

The following definitions must be used in the application of the separation criteria in this order.

NOTE-

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

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

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

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

1-2-3. NOTES

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

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

Abbreviation	Meaning
Mach	Mach number
MALS	Medium Intensity Approach Light System
MALSR	Medium Approach Light System with runway alignment indicator lights
MAP	Missed approach point
MARSA	Military authority assumes responsibility for separation of aircraft
MCA	Minimum crossing altitude
MCI	Mode C Intruder
MDA	Minimum descent altitude
MDM	Main display monitor
MEA	Minimum en route (IFR) altitude
MEARTS	Micro En Route Automated Radar Tracking System
METAR	Aviation Routine Weather Report
MIA	Minimum IFR altitude
MIAWS	Medium Intensity Airport Weather System
MIRL	Medium intensity runway lights
MNPS	Minimum Navigation Performance Specification
MNT	Mach Number Technique
MOA	Military operations area
MOCA	Minimum obstruction clearance altitude
MRA	Minimum reception altitude
MSAW	Minimum Safe Altitude Warning
MSL	Mean sea level
MTI	Moving target indicator
MTR	Military training route
MVA	Minimum vectoring altitude
NADIN	National Airspace Data Interchange Network
NAR	National Automation Request
NAS	National Airspace System
NAT	ICAO North Atlantic Region
NAT HLA	North Atlantic High Level Airspace
NBCAP	National Beacon Code Allocation Plan
NDB	Nondirectional radio beacon
NHOP	National Hurricane Operations Plan
NM	Nautical mile
NOAA	National Oceanic and Atmospheric Administration
NOPAC	North Pacific
NORAD	North American Aerospace Defense Command
NOS	National Ocean Service
NOTAM	Notice to Air Missions

Abbreviation	Meaning
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
PBCT	Proposed boundary crossing time
P/CG	Pilot/Controller Glossary
PDC	Pre-Departure Clearance
PIREP	Pilot Weather Report
PPI	Plan position indicator
РТР	Point-to-point
PVD	Plan view display
RA	Radar Associate
RAIL	Runway alignment indicator lights
RAPCON	Radar Approach Control facility (USAF, USN and USMC)
RATCF	Radar Air Traffic Control Facility (USN and USMC)
RBS	Radar bomb scoring
RCC	Rescue Coordination Center
RCLS	Runway Centerline System
RCR	Runway condition reading
RE	Recent (used to qualify weather phenomena such as rain, e.g. recent rain = RERA)
REIL	Runway end identifier lights
RF	Radius-to-Fix
RNAV	Area navigation
RNP	Required Navigation Performance
RTQC	Real-Time Quality Control
RVR	Runway visual range
RVSM	Reduced Vertical Separation Minimum
RwyCC	Runway Condition Codes
RwyCR	Runway Condition Report

Abbreviation	Meaning
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
TF	Track-to-Fix
TFMS	Traffic Flow Management System
ТМС	Traffic Management Coordinator
TMU	Traffic Management Unit
TRACON	Terminal Radar Approach Control
TRSA	Terminal radar service area
UFO	Unidentified flying object
UHF	Ultra high frequency
USA	United States Army
USAF	United States Air Force

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

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.

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 is generated when an aircraft produces lift. Because the location of wake turbulence is difficult to determine, the controller is not responsible for anticipating its existence or effect. Aircraft flying through a Super/Heavy aircraft's flight path may have an increased chance of a wake encounter.

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. If unable to provide radar vectors, inform the pilot.

PHRASEOLOGY-

(Identification) UNABLE RADAR VECTORS (time permitting, a reason).

EXAMPLE-

"November 123, unable radar vectors, you are not under my jurisdiction."

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

7. 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. UNMANNED AIRCRAFT SYSTEM (UAS) ACTIVITY INFORMATION.

a. Issue UAS advisory information for known UAS activity, when in your judgment their proximity warrants it. If known, include position, distance, course, type of unmanned aircraft (UA), and altitude.

EXAMPLE-

"U–A–S activity, 12 o'clock, 1 mile, southbound, quad copter, 400 feet and below."

"Unmanned aircraft system activity, 2 miles east of Brandywine Airport, 300 feet and below."

b. Issue UAS advisory information for pilot-reported or tower-observed activity, when in your judgment, their proximity warrants it. If known, include position, altitude, course, and type. Continue to issue advisories to potentially impacted aircraft for at least 15 minutes following the last report.

EXAMPLE-

"U-A-S activity reported, 12 o'clock, 1 mile, altitude reported one thousand two hundred."

"Unmanned aircraft system activity observed, 1 mile east of Trenton Airport, altitude unknown."

2-1-23. 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.

2–1–24. 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.

2-1-25. WHEELS DOWN CHECK

USA/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.

2-1-26. SUPERVISORY NOTIFICATION

Ensure supervisor/controller-in-charge (CIC) is aware of conditions which impact sector/position

operations including, but not limited to, the following:

- a. Weather.
- **b.** Equipment status.
- **c.** Potential sector overload.
- d. Emergency situations.
- e. Special flights/operations.

f. Aircraft/pilot activity, including unmanned aircraft system (UAS) operation that is considered suspicious, as prescribed in FAA Order JO 7610.4, paragraph 7–3–1, and for information more specific to UAS, FAA Order JO 7210.3, paragraph 2–1–32.

REFERENCE– P/CG Term – Suspicious UAS.

2-1-27. 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 JO 8020.16, Air Traffic Organization Aircraft Accident and Aircraft Incident Notification, Investigation, and Reporting, Chapter 11, Para 3, Air Traffic Facility Responsibilities.

2-1-28. TCAS RESOLUTION ADVISORIES

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

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

NOTE-

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

REFERENCE-

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

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

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

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

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

NOTE-

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

EXAMPLE-

1. "New York Center, United 321, TCAS RA."

NOTE-

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

EXAMPLE-

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

2-1-29. RVSM OPERATIONS

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

a. Non-RVSM aircraft operating in RVSM airspace.

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

NOTE-

The operations supervisor/CIC is responsible for system acceptance of a non-RVSM aircraft beyond the initial sector-to-sector coordination following the pilot request to access the airspace. Operations supervisor/CIC responsibilities are defined in FAA Order JO 7210.3, Chapter 6, Section 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 Baxter1 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.

g. ATC may allow aircraft to remain in RVSM airspace using reduced vertical separation minima after the loss of a transponder or Mode C altitude reporting.

NOTE-

In a transponder out situation, the aircraft's altitude-keeping capabilities required for flight in RVSM airspace should remain operational.

REFERENCE-

FAA Order JO 7110.65, Para 4–5–1, Vertical Separation Minima. FAA Order JO 7110.65, Para 2–3–8, Aircraft Equipment Suffix. 14 CFR Section 91.215 ATC Transponder and Altitude Reporting Equipment and Use.

Advisory Circular AC 91–85B, Authorization of Aircraft and Operators for Flight in Reduced Vertical Separation Minimum (RVSM) Airspace.

2-1-30. 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 is 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.

2-1-31. "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 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 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 subparagraph d1 are not available.

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

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.

"TN5552Q." "AAl192." "LN751B."

EXAMPLE-"N12345."

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-

FAA Order JO 7110.65, Para 2–4–20, Aircraft Identification. FAA Order 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. The aircraft equipment suffix identifying communication, navigation and surveillance (CNS) capability is generated by automation using the equipment codes of the ICAO flight plan. To change a suffix, the CNS equipment codes must be modified, allowing automation to translate them into the proper suffix. If using unsupported automation platforms (OFDPS and FDP2000), verbally coordinate changes with adjacent supported facilities.

b. ERAM and ATOP are best suited for making changes to the equipment codes in an ICAO flight plan. For FDIO entries, if uncertain of the proper format to correctly amend an equipment code, verbally coordinate the change with the appropriate en route facility.

NOTE-

Directly changing the equipment suffix with a symbol preceded by a slant instead of amending the aircraft equipment codes may unintentionally alter or delete other equipment codes.

c. For VFR operations, indicate the aircraft's transponder and navigation capabilities by adding the appropriate symbol, preceded by a slant (See TBL 2-3-10).

d. 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.

e. 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."

NOTE-

/H and /O are intended for ATC use only. These suffixes are not published in the Aeronautical Information Manual.

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 Urgent (UUA) and Routine (UA) PIREPs. Timely dissemination of PIREPs alerts pilots to weather conditions and provides information useful to forecasters in the development of aviation forecasts. PIREPs also provide information required by ATC in the provision of 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.

NOTE-

Routine PIREPs indicating a lack of forecasted weather conditions, for example, a lack of icing or turbulence, are also valuable to aviation weather forecasters and pilots. This is especially true when adverse conditions are expected or forecasted but do not develop or no longer exist.

REFERENCE-

(UA/UUA).

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 8, Section 2, Pilot Weather Report

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 bases, tops and cloud coverage when available. Additionally, when providing approach control services, ensure that at least one descent/climb–out PIREP 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 less than good.
- 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 7-1-22, Wind Shear PIREPs.

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

REFERENCE-

FAA Order JO 7210.3, Para 6–3–1, Handling of SIGMETs, CWAs, and PIREPs.

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

(a) The appropriate intrafacility positions.

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

(c) Outside Alaska: The overlying ARTCC's Flight Data Unit for long-line dissemination.

(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 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, Para 7–1–12, 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. *TERMINAL*: In STARS, correlate precipitation descriptors from subparagraph c as follows:

1. Level 1 = LIGHT

2. Level 2 = MODERATE

- **3.** Levels 3 and 4 = HEAVY
- **4.** Levels 5 and 6 = EXTREME

e. 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.

f. *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."*

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

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

1. An approval for lateral deviation authorizes the pilot to maneuver left or right within the lateral limits specified in the clearance.

REFERENCE-

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

2. When approving a weather deviation for an aircraft that had previously been issued a crossing altitude, including climb via or descend via clearances, issue an altitude to maintain and, if necessary, assign a speed along with the clearance to deviate. If you intend on clearing the aircraft to resume the procedure, advise the pilot.

PHRASEOLOGY-

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

NOTE-

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

REFERENCE-

FAA Order JO 7110.65, Para 4–2–5, Route or Altitude Amendments. FAA Order JO 7110.65, Para 5–6–1, Application. FAA Order JO 7110.65, Para 5–6–2, Methods.

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

NOTE-

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

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

PHRASEOLOGY-

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

or

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

EXAMPLE-

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

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

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

PHRASEOLOGY-

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

EXAMPLE-

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

En Route: In this case the corresponding fourth line entry is "DN," and the receiving controller must provide a clearance to rejoin the route in accordance with paragraph 2-1-15c.

Chapter 3. Airport Traffic Control – Terminal

Section 1. General

3-1-1. PROVIDE SERVICE

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

NOTE-

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

3-1-2. PREVENTIVE CONTROL

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

NOTE-

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

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

3-1-3. USE OF ACTIVE RUNWAYS

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

NOTE-

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

REFERENCE-

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

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

PHRASEOLOGY-

CROSS (runway) AT (point/intersection).

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

PHRASEOLOGY-

CROSS (runway) AT (point/intersection).

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

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

NOTE-

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

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

REFERENCE-

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

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

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

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

REFERENCE-

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

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

REFERENCE-

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

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

3-1-5. VEHICLES/EQUIPMENT/PERSON-NEL NEAR/ON RUNWAYS

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

PHRASEOLOGY-

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

REFERENCE-

FAA Order JO 7210.3, Para 4-3-1, Letters of Agreement.

NOTE-

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

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

NOTE-

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

NOTE-

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

REFERENCE-

FAA Order JO 7110.65, Para 3-7-4, Runway Proximity.

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

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

AC 150/5300-13, Airport Design.

AC 150/5340-1G, Standards for Airport Markings.

14 CFR Section 91.129, Operations in Class D Airspace.

AIM, Para 2–2–3, Obstruction Lights. P/CG Term – Runway in Use/Active Runway/Duty Runway.

3-1-6. TRAFFIC INFORMATION

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

EXAMPLE-

"Mower left of runway two seven."

"Trucks crossing approach end of runway two five."

"Workman on taxiway Bravo."

"Aircraft left of runway one eight."

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

EXAMPLE-

1. "Traffic, U.S. Air MD–Eighty on downwind leg to your left."

2. "King Air inbound from outer marker on straight-in approach to runway one seven."

3. "Traffic, Boeing 737 on 2-mile final to the parallel runway, runway two six right, cleared to land. Caution wake turbulence."

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

General

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

3-1-7. POSITION DETERMINATION

Determine the position of an aircraft, personnel or equipment before issuing taxi instructions, takeoff clearance, or authorizing personnel, and/or equipment to proceed onto the movement area.

NOTE-

When possible, positions of aircraft, vehicles, equipment and/or personnel may be determined visually or through use of a display system. When ATC is unable to determine position visually or via a display system, position reports may be used.

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-

FAA Order JO 7110.65, Para 2–6–2, PIREP Solicitation and Dissemination. FAA Order JO 7110.65, Para 2–9–3, Content. FAA Order 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.

c. Apply the following procedures and phraseology for the depicted wind shear detection system described below.

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-

FAA Order 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 paragraph 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, paragraph 3–9–1, Departure Information, and paragraph 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.

d. 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 is 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."

3-1-9. USE OF TOWER RADAR DISPLAYS

a. Uncertified tower display workstations must be used only as an aid to assist controllers in visually locating aircraft or in determining their spatial relationship to known geographical points. Radar services and traffic advisories are not to be provided using uncertified tower display workstations. General information may be given in an easy to understand manner, such as "to your right" or "ahead of you."

EXAMPLE-

"Follow the aircraft ahead of you passing the river at the stacks." "King Air passing left to right."

REFERENCE-

FAA Order JO 7210.3, Para 10-5-3, Functional Use of Certified Tower Radar Displays.

b. Local controllers may use certified tower radar displays for the following purposes:

1. To determine an aircraft's identification, exact location, or spatial relationship to other aircraft.

NOTE-

This authorization does not alter visual separation procedures. When employing visual separation, the provisions of paragraph 7–2–1, Visual Separation, apply unless otherwise authorized by the Service Area Director of Air Traffic Operations.

REFERENCE-

FAA Order JO 7110.65, Para 5–3–2, Primary Radar Identification Methods.

FAA Order JO 7110.65, Para 5–3–3, Beacon/ADS–B Identification Methods.

FAA Order JO 7110.65, Para 5–3–4, Terminal Automation Systems Identification Methods.

2. To provide aircraft with radar traffic advisories.

3. To provide a direction or suggested headings to VFR aircraft as a method for radar identification or as an advisory aid to navigation.

PHRASEOLOGY-

(Identification), PROCEED (direction)-BOUND, (other instructions or information as necessary),

or

(*identification*), SUGGESTED HEADING (degrees), (other instructions as necessary).

NOTE-

It is important that the pilot be aware of the fact that the directions or headings being provided are suggestions or are advisory in nature. This is to keep the pilot from being inadvertently misled into assuming that radar vectors (and other associated radar services) are being provided when, in fact, they are not.

4. To provide information and instructions to aircraft operating within the surface area for which the tower has responsibility.

EXAMPLE-

"TURN BASE LEG NOW."

NOTE-

Unless otherwise authorized, tower radar displays are intended to be an aid to local controllers in meeting their responsibilities to the aircraft operating on the runways or within the surface area. They are not intended to provide radar benefits to pilots except for those accrued through a more efficient and effective local control position. In addition, local controllers at nonapproach control towers must devote the majority of their time to visually scanning the runways and local area; an assurance of continued positive radar identification could place distracting and operationally inefficient requirements upon the local controller. Therefore, since the requirements of paragraph 5-3-1, Application, cannot be assured, the radar functions prescribed above are not considered to be radar services and pilots should not be advised of being in "radar contact."

c. Additional functions may be performed provided the procedures have been reviewed and authorized by appropriate management levels.

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

3-1-10. OBSERVED ABNORMALITIES

When requested by a pilot or when you deem it necessary, inform an aircraft of any observed abnormal aircraft condition.

PHRASEOLOGY-

(Item) APPEAR/S (observed condition).

EXAMPLE-

"Landing gear appears up." "Landing gear appears down and in place." "Rear baggage door appears open."

3-1-11. SURFACE AREA RESTRICTIONS

a. If traffic conditions permit, approve a pilot's request to cross Class C or Class D surface areas or exceed the Class C or Class D airspace speed limit. Do not, however, approve a speed in excess of 250 knots (288 mph) unless the pilot informs you a higher minimum speed is required.

NOTE-

14 CFR Section 91.117 permits speeds in excess of 250 knots (288 mph) when so required or recommended in the airplane flight manual or required by normal military operating procedures.

REFERENCE– FAA Order JO 7110.65, Para 2–1–16, Surface Areas.

b. Do not approve a pilot's request or ask a pilot to conduct unusual maneuvers within surface areas of Class B, C, or D airspace if they are not essential to the performance of the flight.

EXCEPTION. A pilot's request to conduct aerobatic practice activities may be approved, when operating in accordance with a letter of agreement, and the activity will have no adverse effect on safety of the air traffic operation or result in a reduction of service to other users.

REFERENCE-

FAA Order JO 7210.3, Para 5-4-8, Aerobatic Practice Areas.

NOTE-

These unusual maneuvers include unnecessary low passes, unscheduled flybys, practice instrument approaches to altitudes below specified minima (unless a landing or touch-and-go is to be made), or any so-called "buzz jobs" wherein a flight is conducted at a low altitude and/or a high rate of speed for thrill purposes. Such maneuvers increase hazards to persons and property and contribute to noise complaints.

3-1-12. VISUALLY SCANNING RUNWAYS

a. Local controllers must visually scan runways to the maximum extent possible.

b. Ground control must assist local control in visually scanning runways, especially when runways are in close proximity to other movement areas.

3–1–13. ESTABLISHING TWO–WAY COMMUNICATIONS

Pilots are required to establish two-way radio communications before entering the Class D airspace. If the controller responds to a radio call with, "(a/c call sign) standby," radio communications have been established and the pilot can enter the Class D airspace. If workload or traffic conditions prevent immediate provision of airport traffic control services, inform the pilot to remain outside the Class D airspace until conditions permit the services to be provided.

PHRASEOLOGY-

(A/c call sign) REMAIN OUTSIDE DELTA AIRSPACE AND STANDBY.

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

3-1-14. GROUND OPERATIONS WHEN VOLCANIC ASH IS PRESENT

When volcanic ash is present on the airport surface, and to the extent possible:

a. Avoid requiring aircraft to come to a full stop while taxiing.

b. Provide for a rolling takeoff for all departures.

NOTE-

When aircraft begin a taxi or takeoff roll on ash contaminated surfaces, large amounts of volcanic ash will again become airborne. This newly airborne ash will significantly reduce visibility and will be ingested by the engines of following aircraft.

REFERENCE– AIM, Para 7–5–9, Flight Operations in Volcanic Ash.

3-1-15. GROUND OPERATIONS RELATED TO THREE/FOUR-HOUR TARMAC RULE

When a request is made by the pilot-in-command of an aircraft to return to the ramp, gate, or alternate deplaning area due to the Three/Four-Hour Tarmac Rule:

a. Provide the requested services as soon as operationally practical, or

b. Advise the pilot–in–command that the requested service cannot be accommodated because it would create a significant disruption to air traffic operations.

NOTE-

Facility procedures, including actions that constitute a significant disruption, vary by airport and must be identified in the facility directive pertaining to the Three/Four-Hour Tarmac Rule.

PHRASEOLOGY-

(Identification) TAXI TO (ramp, gate, or alternate deplaning area) VIA (route).

or

(Identification) EXPECT A (number) MINUTE DELAY DUE TO (ground and/or landing and/or departing) TRAFFIC,

or

(Identification) UNABLE DUE TO OPERATIONAL DISRUPTION.

REFERENCE-

DOT Rule, Enhancing Airline Passenger Protections, 14 CFR, Part 259, commonly referred to as the Three/Four–Hour Tarmac Rule.

Section 5. Runway Selection

3-5-1. SELECTION

a. The ATCT supervisor/controller-in-charge (CIC) determines which runway/s are designated RUNWAY IN USE/ACTIVE RUNWAY/DUTY RUNWAY.

b. Assign the runway/s most nearly aligned with the wind when 5 knots or more, or the "calm wind" runway when less than 5 knots unless:

1. Use of another runway is operationally advantageous.

2. A Runway Use Program is in effect.

c. Tailwind and crosswind considerations take precedence over delay/capacity considerations, and noise abatement operations/procedures/agreements.

d. If a pilot prefers to use a runway different from that specified, the pilot is expected to advise ATC. ATC may honor such requests as soon as is

operationally practicable. ATC will advise pilots when the requested runway is noise–sensitive.

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-

FAA Order JO 7110.65, Para 2-6-3, Reporting Weather Conditions.

NOTE-

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

PHRASEOLOGY-

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

or

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

EXAMPLE-

"Runway Three–Six Left, taxi via taxiway Alpha, hold short of taxiway Charlie."

or

"Runway Three-Six Left, taxi via Alpha, hold short of Charlie."

or

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

or

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

or

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

c. Issue a crossing clearance to aircraft 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 and receive 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-

FAA Order JO 7210.3, Para 10-3-11 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. Issue a crossing clearance to vehicles 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. Vehicles that have been issued a clearance onto a runway to conduct runway operations are authorized to cross intersecting runways, unless otherwise restricted. Issue hold short instructions as needed.

NOTE-

Vehicles should not normally use runways as transition routes to other parts of the airfield. These movements are not considered runway operations and the use of alternative routes is preferred.

g. 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, paragraph 3–10–10, Altitude Restricted Low Approach.

REFERENCE-

AIM, Runway Position Holding Markings, Subpara 2–3–5a. FAA Order 7110.65, Para 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 the 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.

REFERENCE-

FAA Order JO 7110.65, Para 3–10–4, Intersecting Runway/Intersecting Flight Path Separation. FAA Order JO 7210.3, Para 10–3–7, Land and Hold Short Operations (LAHSO).

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

PHRASEOLOGY-

READ BACK HOLD INSTRUCTIONS.

EXAMPLE-

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

or

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

"American Four Ninety Two, Roger."

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

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

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

"American Sixty Three, Roger."

"American Sixty Three, read back hold instructions."

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

or

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

"OPS Three, Roger."

"OPS Three, read back hold instructions."

NOTE-

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

i. Issue progressive taxi/ground movement instructions when:

1. A pilot/operator requests.

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

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

NOTE-

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

REFERENCE-

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

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

PHRASEOLOGY-

TAXI WITHOUT DELAY (traffic if necessary).

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

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

PHRASEOLOGY-

HOLD SHORT OF (runway) APPROACH

HOLD SHORT OF (runway)DEPARTURE

3-7-3. GROUND OPERATIONS

Avoid clearances which require:

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

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

NOTE-

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

EXAMPLE-

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

or

When appropriate,

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

REFERENCE-

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

3-7-4. RUNWAY PROXIMITY

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

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

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

c. Issue traffic information as necessary.

PHRASEOLOGY-

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

NOTE-

Establishing hold lines/signs is the responsibility of the airport manager. The standards for surface measurements, markings, and signs are contained in AC 150/5300–13, Airport Design; AC 150/5340–1, Standards for Airport Markings, and AC 150/5340–18, Standards for Airport Sign Systems. The operator is responsible for properly positioning the aircraft, vehicle, or equipment at the

appropriate hold line/sign or designated point. The requirements in paragraph 3–1–12, Visually Scanning Runways, remain valid as appropriate.

REFERENCE-

FAA Order JO 7110.65, Para 3–7–2, Taxi and Ground Movement Operations. FAA Order JO 7110.65, Para 3–10–10, Altitude Restricted Low Approach. FAA Order JO 7110.65, Para 3, 1, 5, Vahiclas/Equipment/Parsonnal

FAA Order JO 7110.65, Para 3–1–5, Vehicles/Equipment/Personnel on Runways.

3-7-5. PRECISION APPROACH CRITICAL AREA

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

PHRASEOLOGY-

HOLD SHORT OF (runway) ILS CRITICAL AREA.

NOTE-

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

REFERENCE-

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

1. LOCALIZER CRITICAL AREA

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

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

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

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

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

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

PHRASEOLOGY-

ILS CRITICAL AREA NOT PROTECTED.

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

NOTE-

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

REFERENCE-

AC150/5340-1, Standards for Airport Markings.

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

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

NOTE-

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

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

NOTE-

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

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

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

NOTE-

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

PHRASEOLOGY-

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

TAXIING AIRCRAFT/VEHICLE LEFT/RIGHT OF RUNWAY.

EXAMPLE-

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

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

REFERENCE-

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



FIG 3-7-1
Precision Obstacle Free Zone (POFZ)

Section 5. Radar Separation

5-5-1. APPLICATION

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

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

REFERENCE-

FAA Order JO 7110.5, Para 2–3–8, Aircraft Equipment Suffixes. FAA Order JO 7110.5, TBL 2–3–10, Aircraft Equipment Suffixes FAA Order JO 7110.65, Para 4–4–1, Route Use. AIM, Para 5–1–8, Area Navigation (RNAV). AIM, Para 5–3–4, Area Navigation (RNAV) Routes. P/CG Term – Global Navigation Satellite System (GNSS)[ICAO]. P/CG Term – Global Positioning Satellite/ Wide Area Augmentation Minimum En Route IFR Altitude (GPS/WAAS MEA). P/CG Term – Parallel Offset Route.

b. Radar separation may be applied between:

1. Radar identified aircraft.

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

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

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

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

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

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

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

(3) Narrowband radar operations-10 miles; and

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

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

REFERENCE-

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

4. A radar-identified aircraft and one not radar-identified that is in transit from oceanic airspace or non-radar offshore airspace into an area of known radar coverage where radar separation is applied as specified in paragraph 8–5–5, Radar Identification Application, until the transiting aircraft is radar-identified or the controller establishes other approved separation in the event of a delay or inability to establish radar identification of the transiting aircraft.

REFERENCE– FAA Order JO 7110.65. J

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

5-5-2. TARGET SEPARATION

Apply radar separation:

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

b. Between the ends of beacon control slashes.

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

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

REFERENCE-

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

5-5-3. TARGET RESOLUTION

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

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

NOTE-

This procedure must not be provided utilizing mosaic radar systems.

c. Target resolution must be applied as follows:

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

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

3. Between the ends of two beacon control slashes.

5-5-4. MINIMA

Separate aircraft by the following minima:

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

NOTE-

Includes single sensor long range radar mode.

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

2. When 40 miles or more from the antenna-5 miles.

3. For single sensor ASR–9 with Mode S, when less than 60 miles from the antenna– *3 miles*.

4. For single sensor ASR-11 MSSR Beacon, when less than 60 miles from the antenna- *3 miles*.

NOTE-

Wake turbulence procedures specify increased separation minima required for certain classes of aircraft because of the possible effects of wake turbulence.

b. *TERMINAL*. FUSION:

1. Fusion target symbol – *3 miles*.

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

NOTE-

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

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

4. ADS-B may be integrated as an additional surveillance source when operating in FUSION mode. The display of ADS-B targets is permitted and does not require radar reinforcement.

NOTE-

ADS-B surveillance must only be used when operating in FUSION.

5. The use of ADS-B only information may be used to support all radar requirements associated with any published instrument procedure that is annotated "Radar Required".

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

c. EBUS, Terminal Mosaic/Multi-Sensor Mode

NOTE-

Mosaic/Multi–Sensor Mode combines radar input from 2 to 16 sites into a single picture utilizing a mosaic grid composed of radar sort boxes.

1. Below FL 600- 5 miles.

2. At or above FL 600- 10 miles.

3. Facility directives may specify 3 miles for areas meeting all of the following conditions:

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

(b) Significant operational advantages can be obtained.

(c) Within 40 miles of the antenna.

(d) Up to and including FL 230.

PHRASEOLOGY-

(Speed adjustment), IF UNABLE ADVISE.

EXAMPLE-

"Reduce speed to one niner zero, if unable advise."

c. Simultaneous speed reduction and descent can be extremely difficult, particularly for turbojet aircraft. Specifying which action is to be accomplished first removes any doubt the pilot may have as to controller intent or priority. Specify which action is expected first when combining speed reduction with a descent clearance.

1. Speed reductions prior to descent.

PHRASEOLOGY-REDUCE SPEED:

TO (specified speed),

or

(number of knots) KNOTS.

THEN, DESCEND AND MAINTAIN (altitude).

2. Speed reduction following descent.

PHRASEOLOGY-DESCEND AND MAINTAIN (altitude).

THEN, REDUCE SPEED:

TO (specified speed in knots),

or

TO MACH (Mach number),

or

(number of knots) KNOTS.

NOTE-

When specifying descent prior to speed reduction, consider the maximum speed requirements specified in 14 CFR Section 91.117. It may be necessary for the pilot to level off temporarily and reduce speed prior to descending below 10,000 feet MSL.

d. Specify combined speed/altitude fix crossing restrictions.

PHRASEOLOGY-

CROSS (fix) AT AND MAINTAIN (altitude) AT (specified speed) KNOTS.

EXAMPLE-

"Cross Robinsville at and maintain six thousand at two three zero knots."

REFERENCE-

FAA Order JO 7110.65, Para 2–4–17, Numbers Usage. FAA Order JO 7110.65, Para 4–5–7, Altitude Information.

e. When issuing speed adjustments to aircraft cleared on procedures with published speed restrictions, specify the point at which the issued restriction begins, ends, or changes the published restrictions.

PHRASEOLOGY-

CROSS (fix/waypoint) AT (speed).

MAINTAIN (speed) UNTIL (fix/waypoint),

THEN (additional instructions).

RESUME PUBLISHED SPEED.

COMPLY WITH SPEED RESTRICTIONS.

(if required) EXCEPT (alternate instructions).

DELETE SPEED RESTRICTIONS.

CLIMB/DESCEND VIA (SID/STAR name and number) (transition if required.)

NOTE-

1. Aircraft will meet all published speed restrictions when on any route or procedure with published speed restrictions regardless of climb via or descend via clearance.

2. Due to variations of aircraft types, Flight Management Systems, and environmental conditions, ATC should anticipate that aircraft will begin speed adjustments at varying locations along cleared routes or procedures that contain published speed restrictions.

3. *Issuing speed adjustments to aircraft flying procedures with published speed restrictions may impact the pilot's ability to fly the intended flight profile of the procedure.*

EXAMPLE-

1. *"Cross Alisa at two two zero knots, then climb via the TIMMY One departure."*

NOTE-

The aircraft will maintain the ATC assigned speed until Alisa waypoint and will then comply with the speed restrictions on the TIMMY One departure.

EXAMPLE-

2. "Cross Alisa at one zero thousand, then climb via the TIMMY One departure, except maintain two two zero knots."

NOTE-

The aircraft will maintain the ATC assigned speed of two two zero knots and will not meet any published speed restrictions. Aircraft will meet all published altitude restrictions after Alisa.

EXAMPLE-

3. "Maintain two two zero knots until BALTR then resume published speed."

NOTE-

The ATC assigned speed assignment of two two zero knots would apply until BALTR. The aircraft would then comply with the published speed restrictions.

EXAMPLE-

4. "Descend via the KEPEC Two arrival, except after NIPZO maintain one eight zero knots."

NOTE-

The aircraft will comply with all published restrictions. After NIPZO, the aircraft will continue to comply with altitude restrictions, but will comply with the ATC assigned speed adjustment.

REFERENCE-

FAA Order JO 7110.65, Para 2–4–17, Numbers Usage. FAA Order JO 7110.65, Para 4–5–7, Altitude Information. FAA Order JO 7110.65, Para 5–7–1, Application.

5-7-3. SPEED ASSIGNMENTS

When assigning airspeeds, use the following:

a. To aircraft operating between FL 280 and 10,000 feet, a speed not less than 250 knots or the equivalent Mach number.

NOTE-

1. On a standard day the Mach numbers equivalent to 250 knots calibrated airspeed (CAS) (subject to minor variations) are:

FL 240-0.6 FL 250-0.61 FL 260-0.62 FL 270-0.64 FL 280-0.65 FL 290-0.66.

2. A pilot will advise if unable to comply with the speed assignment.

b. To aircraft operating beneath Class B airspace or in a VFR corridor designated through Class B airspace: assign a speed not more than 200 knots.

c. To arrival aircraft operating below 10,000 feet:

1. Turbojet aircraft:

(a) Assign a speed not less than 210 knots, except for the aircraft as specified in subparagraph b above, or

(b) Assign a speed not less than 170 knots when the aircraft is within 20 flying miles of the runway threshold.

2. Reciprocating and turboprop aircraft:

(a) Assign a speed not less than 200 knots, or

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(b) Assign a speed not less than 150 knots when the aircraft is within 20 flying miles of the runway threshold.

d. To departures:

1. Turbojet aircraft: assign a speed not less than 230 knots.

2. Reciprocating and turboprop aircraft: assign a speed not less than 150 knots.

e. To helicopters: Assign a speed not less than 60 knots.

REFERENCE-

FAA Order JO 7110.65, Para 5-7-2, Methods.

f. Lower speeds may be assigned when operationally advantageous.

NOTE-

1. A pilot operating at or above 10,000 feet MSL on an assigned speed adjustment greater than 250 knots is expected to comply with 14 CFR Section 91.117(a) when cleared below 10,000 feet MSL, within domestic airspace, without notifying ATC. Pilots are expected to comply with the other provisions of 14 CFR Section 91.117 without notification.

2. Speed restrictions of 250 knots do not apply to aircraft operating beyond 12 NM from the coastline within the U.S. Flight Information Region, in offshore Class E airspace below 10,000 feet MSL. However, in airspace underlying a Class B airspace area designated for an airport, or in a VFR corridor designated through such a Class B airspace area, pilots are expected to comply with the 200 knot speed limit specified in 14 CFR Section 91.117(c). (See 14 CFR Sections 91.117(c) and 91.70).

3. The phrases "maintain maximum forward speed" and "maintain slowest practical speed" are primarily intended for use when sequencing a group of aircraft. As the sequencing plan develops, it may be necessary to determine the specific speed and/or make specific speed assignments.

REFERENCE-

FAA Order JO 7110.65, Para 5–7–2, Methods. 14 CFR Sections 91.117(c) and 91.703.

5-7-4. TERMINATION

Advise aircraft when speed adjustments are no longer needed.

a. Advise aircraft to "resume normal speed" when ATC-assigned speed adjustments are no longer required and no published speed restrictions apply.

PHRASEOLOGY-

RESUME NORMAL SPEED.

NOTE-

"Resume normal speed" is only used where there is no underlying published speed restriction. It does not delete speed restrictions on upcoming segments of flight and does not relieve the pilot of those speed restrictions which are applicable to 14 CFR Section 91.117.

b. Instruct aircraft to "comply with speed restrictions" applicable to the charted procedure or route being flown.

PHRASEOLOGY-

COMPLY WITH SPEED RESTRICTIONS

NOTE-

The phraseology "comply with restrictions" requires compliance with all altitude and/or speed restrictions depicted on the procedure.

REFERENCE-

FAA Order JO 7110.65, Para 5-6-2, Methods.

c. Advise aircraft to "resume published speed" when aircraft have been assigned an unpublished speed and ATC wants aircraft to meet subsequent published speed restrictions on the route or procedure.

PHRASEOLOGY-

RESUME PUBLISHED SPEED

REFERENCE-

FAA Order JO 7110.65, Para 4-5-7, Altitude Information.

d. Advise aircraft when either ATC assigned speed adjustments or published speed restrictions are no longer required.

PHRASEOLOGY-

DELETE SPEED RESTRICTIONS

NOTE-

When deleting published restrictions, ATC must ensure obstacle clearance until aircraft are established on a route where no published restrictions apply. This does not relieve the pilot of those speed restrictions which are applicable to 14 CFR Section 91.117.

REFERENCE-

FAA Order JO 7110.65, Para 5-7-1, Application.

Section 8. Radar Departures

5-8-1. PROCEDURES

a. When vectoring a departing aircraft on a radar SID, concurrent use of a diverse vector area (DVA) is not permitted.

b. When the departure route description on a radar SID contains the phrase, "Fly assigned heading," "as assigned by ATC," or similar phrases, with a published range of headings in the route description, assign headings or vectors as needed not to exceed those headings in the published range until reaching the MVA/MIA.

REFERENCE-

FAA Order JO 7110.65, Para 5-6-3, Vectors Below Minimum Altitude.

5-8-2. INITIAL HEADING

a. Before departure, assign the initial heading consistent with either a SID being flown or DVA, if applicable, when a departing aircraft is to be vectored immediately after takeoff. At locations that have a DVA, concurrent use of both a SID and DVA is not permitted.

PHRASEOLOGY-

FLY RUNWAY HEADING. TURN LEFT/RIGHT, HEADING (degrees).

NOTE-

1. *TERMINAL.* A purpose for the heading is not necessary, since pilots operating in a radar environment associate assigned headings with vectors to their planned route of flight.

2. ATC assumes responsibility for terrain and obstacle avoidance when IFR aircraft are below the minimum IFR altitude (MVA, MIA, MEA) and are taken off departure/ missed approach procedures, or if issued go-around instructions, except after conducting a visual approach. ATC does not assume this responsibility when utilizing a Diverse Vector Area (DVA) or when operating on SIDs with or without a published range of headings in the departure route description.

REFERENCE-

FAA Order JO 7110.65, Para 4–3–2, Departure Clearances. FAA Order JO 7110.65, Para 5–6–3, Vectors Below Minimum Altitude.

b. At locations with both SIDs and DVAs, an amended departure clearance is required to cancel a previously assigned SID and subsequently utilize a DVA or vice versa. The amended clearance must be provided to the pilot in a timely manner so that the

pilot may brief the changes in advance of entering the runway.

c. Issue an altitude to maintain with the initial heading when the heading will take the aircraft off a departure procedure that contains both a published lateral path to a waypoint and crossing restrictions.

d. When conducting simultaneous parallel runway departures utilizing RNAV SIDs, advise aircraft of the initial fix/waypoint on the RNAV route.

PHRASEOLOGY-

RNAV to (fix/waypoint), RUNWAY (number), CLEARED FOR TAKEOFF.

EXAMPLE-

"RNAV to MPASS, Runway Two-Six Left, cleared for takeoff."

NOTE-

1. TERMINAL. A purpose for an initial waypoint advisory is not necessary since pilots associate this advisory with the flight path to their planned route of flight. Pilots must immediately advise ATC if a different RNAV SID is entered in the aircraft FMS.

2. *The SID transition is not restated as it is contained in the ATC clearance.*

3. Aircraft cleared via RNAV SIDs designed to begin with a vector to the initial waypoint are assigned a heading before departure.

REFERENCE-

FAA Order JO 7110.65, Para 3–9–9, Nonintersecting Converging Runway Operations. FAA Order JO 7110.65, Para 4–3–2, Departure Clearances. AIM, Para 5–2–7, Departure Control.

5-8-3. SUCCESSIVE OR SIMULTANEOUS DEPARTURES

TERMINAL

Separate aircraft departing from the same airport/heliport or adjacent airports/heliports in accordance with the following minima provided radar identification with the aircraft will be established within 1 mile of the takeoff runway end/helipad and courses will diverge by at least the minimum required, as stated below.

NOTE-

1. FAA Order 8260.46, Departure Procedure (DP) Program, and FAA Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), Volume 4, establishes guidelines for IFR departure turning procedures which assumes a climb to 400 feet above the departure end of runway (DER) elevation before a turn is commenced. TERPS criteria ensures obstacle clearance with a climb gradient of 200 feet per nautical mile from the DER. "Immediately after departure" is considered to be any turn that provides at least the minimum required divergence that commences no later than 2 miles from the DER.

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 successive departures from the same runway/helipad or parallel runways/helicopter takeoff courses separated by less than 2,500 feet-1 mile if courses diverge by 15 degrees or more immediately after departure. (See FIG 5-8-1, FIG 5-8-2, and FIG 5-8-3.)

FIG 5-8-1 Successive Departures



FIG 5-8-2 Simultaneous Departures



FIG 5-8-3 **Simultaneous Departures**

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NOTE-

This procedure does not apply when wake turbulence separation is required.

REFERENCE-

FAA Order JO 7110.65, Para 3-9-7, Wake Turbulence Separation for Intersection Departures. FAA Order JO 7110.65, Para 3-9-8, Intersecting Runway/Intersecting Flight Path Operations. FAA Order JO 7110.65, Para 5-5-4, Minima. FAA Order JO 7110.65, Para 5-5-4, Minima, Subparagraph g.

b. Between simultaneous departures departing in the same direction from parallel runways/helicopter takeoff courses, authorize simultaneous takeoffs if the centerlines/takeoff courses are separated by at least 2,500 feet and courses diverge by 15 degrees or more immediately after departure. (See FIG 5-8-5, and FIG 5-8-6.)

REFERENCE-

FAA Order JO 7110.65, Para 5-5-4, Minima, Subparagraph g.

c. When both aircraft are flying an RNAV SID:

1. Between successive departures from the same runway-1 mile if courses diverge by 10 degrees or more immediately after departure. (See FIG 5-8-1.)

NOTE-

This procedure does not apply when wake turbulence separation is required.

2. Between simultaneous departures from parallel runways/helicopter takeoff courses, authorize simultaneous takeoffs if the centerlines/takeoff courses are separated by at least 700 feet and less than 2,500 feet, courses diverge by 15 degrees or more, and departures are released in accordance with the release distance stagger stated in TBL 5-8-1 below.

<i>TBL 5-8-1</i> Departure Release Distances					
Distance to Divergence (Measured from the further DER)	Minimum Centerline Separation	Release Distance Stagger			
Immediately	700	1000 feet			
No later than 5 NM	1020	2000 feet			
No later than 8 NM	1130	3000 feet			
No later than 11 NM	1360	4000 feet			

NOTE-

This procedure does not apply when wake turbulence separation is required.

FIG 5-8-4 Simultaneous Dependent Departures



3. Between simultaneous departures from parallel runways/helicopter takeoff courses, authorize simultaneous takeoffs if the centerlines/takeoff courses are separated by at least 2,500 feet and courses diverge by 10 degrees or more immediately after departure. (See FIG 5–8–5, and FIG 5–8–6.)

NOTE-

RNAV SIDs specific to this paragraph are those SIDs constructed with a specific lateral path that begins at the DER.



FIG 5-8-6 Parallel Helicopter Course Departures



d. Between aircraft departing from diverging runways:

1. Nonintersecting runways. Authorize simultaneous takeoffs if runways diverge by 15 degrees or more. (See FIG 5–8–7.)





2. Intersecting runways and/or helicopter takeoff courses which diverge by 15 degrees or more. Authorize takeoff of a succeeding aircraft when the preceding aircraft has passed the point of runway and/or takeoff course intersection. When applicable, apply the procedure in paragraph 3-9-5, Anticipating Separation. (See FIG 5-8-8 and FIG 5-8-9.)

FIG 5-8-8 Intersecting Runway Departures



FIG 5-8-9 Intersecting Helicopter Course Departures



NOTE-

This procedure does not apply when wake turbulence separation is required.

REFERENCE-

FAA Order JO 7110.65, Para 5-5-4, Minima, Subparagraph g.

5-8-4. DEPARTURE AND ARRIVAL

TERMINAL. Except as provided in paragraph 5–8–5, Departures and Arrivals on Parallel or Nonintersecting Diverging Runways, separate a departing aircraft from an arriving aircraft on final approach by a minimum of 2 *miles* if separation will increase to a minimum of 3 miles (5 miles when 40 miles or more from the antenna) within 1 minute after takeoff.

NOTE-

1. This procedure permits a departing aircraft to be released so long as an arriving aircraft is no closer than 2 miles from the runway at the time. This separation is determined at the time the departing aircraft commences takeoff roll.

2. Consider the effect surface conditions, such as ice, snow, and other precipitation, may have on known aircraft performance characteristics, and the influence these conditions may have on the pilot's ability to commence takeoff roll in a timely manner.

5-8-5. DEPARTURES AND ARRIVALS ON PARALLEL OR NONINTERSECTING DIVERGING RUNWAYS

TERMINAL. Authorize simultaneous operations between an aircraft departing on a runway and an aircraft on final approach to another parallel or nonintersecting diverging runway if the departure course diverges immediately by at least 30 degrees from the missed approach course until separation is applied and provided one of the following conditions is met:

NOTE-

When one or both of the takeoff/landing surfaces is a helipad, consider the helicopter takeoff course as the runway centerline and the helipad center as the threshold.

a. When parallel runway thresholds are even, the runway centerlines are at least 2,500 feet apart. (See FIG 5-8-10 and FIG 5-8-11.)

FIG 5-8-10 Parallel Thresholds are Even



FIG 5-8-11 Parallel Thresholds are Even



b. When parallel runway thresholds are staggered and:

1. The arriving aircraft is approaching the nearer runway: the centerlines are at least 1,000 feet apart and the landing thresholds are staggered at least 500 feet for each 100 feet less than 2,500 the centerlines are separated. (See FIG 5–8–12 and FIG 5–8–13.)

FIG 5-8-12 Parallel Thresholds are Staggered



FIG 5–8–13 **Parallel Thresholds are Staggered**



NOTE-

In the event of a missed approach by an aircraft requiring wake turbulence separation behind it, apply the procedures in paragraph 3–9–6, Same Runway Separation and/or paragraph 3–9–8, Intersecting Runway/Intersecting Flight Path Operations to ensure that the larger aircraft does not overtake or cross in front of an aircraft departing from the adjacent parallel runway.

REFERENCE-

FAA Order JO 7110.65, Para 5-5-4, Minima, Subparagraph g.

2. The arriving aircraft is approaching the farther runway: the runway centerlines separation exceeds 2,500 feet by at least 100 feet for each 500 feet the landing thresholds are staggered. (See FIG 5-8-14.)

FIG 5-8-14



c. When nonintersecting runways diverge by 15 degrees or more and runway edges do not touch. (See FIG 5–8–15.)



FIG 5-8-15 Diverging Nonintersecting Runways **d.** When the aircraft on takeoff is a helicopter, hold the helicopter until visual separation is possible or apply the separation criteria in subparagraphs a, b, or c.

REFERENCE-

FAA Order JO 7110.65, Para 5-8-4, Departure and Arrival.
Section 4. Approaches

7-4-1. VISUAL APPROACH

A visual approach is an ATC authorization for an aircraft on an IFR flight plan to proceed visually and clear of clouds to the airport of intended landing. A visual approach is not a standard instrument approach procedure and has no missed approach segment. An aircraft unable to complete a landing from a visual approach must be handled as any go–around and appropriate IFR separation must be provided until the aircraft lands or the pilot cancels their IFR flight plan.

a. At airports with an operating control tower, aircraft executing a go-around may be directed to:

1. Enter the traffic pattern for landing. An altitude assignment is not required. The pilot is expected to climb to pattern altitude and is responsible to maintain terrain and obstruction avoidance. ATC must provide approved separation or visual separation from other IFR aircraft, or

2. Proceed as otherwise instructed by ATC. The pilot is expected to comply with assigned instructions, and responsible to maintain terrain and obstruction avoidance until reaching an ATC assigned altitude. ATC is responsible to provide instructions to the pilot to facilitate a climb to the minimum altitude for instrument operations. ATC must provide approved separation or visual separation from other IFR aircraft.

NOTE-

The pilot is responsible for their own terrain and obstruction avoidance during a go-around after conducting a visual approach. The facility can assign headings towards the lowest terrain and obstructions.

b. At airports without an operating control tower, aircraft executing a go-around are expected to complete a landing as soon as possible or contact ATC for further clearance. ATC must maintain approved separation from other IFR aircraft.

REFERENCE-

FAA Order JO 7110.65, Para 2–1–4, Operational Priority. FAA Order JO 7110.65, Para 2–1–20, Wake Turbulence Cautionary Advisories.

FAA Order JO 7110.65, Para 3–10–2, Forwarding Approach Information by Nonapproach Control Facilities. FAA Order JO 7110.65, Para 7–2–1, Visual Separation. FAA Order JO 7110.65, Para 7–4–4, Approaches to Multiple Runways. FAA Order JO 7210.3, Para 10–3–15, Go–around/Missed Approach. P/CG Term – Go-around. AIM, Para 5–4–23, Visual Approach.

7-4-2. VECTORS FOR VISUAL APPROACH

A vector for a visual approach may be initiated if the reported ceiling at the airport of intended landing is at least 500 feet above the MVA/MIA and the visibility is 3 miles or greater. At airports without weather reporting service there must be reasonable assurance (e.g. area weather reports, PIREPs, etc.) that descent and flight to the airport can be made visually, and the pilot must be informed that weather information is not available.

PHRASEOLOGY-

(Ident) FLY HEADING

or

TURN RIGHT/LEFT HEADING (degrees) VECTOR FOR VISUAL APPROACH TO (airport name).

(If appropriate)

WEATHER NOT AVAILABLE.

NOTE-

At airports where weather information is not available, a pilot request for a visual approach indicates that descent and flight to the airport can be made visually and clear of clouds.

REFERENCE-

FAA Order JO 7110.65, Para 5–9–1, Vectors to Final Approach Course.

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

FAA Order JO 7110.65, Para 7–4–3, Clearance for Visual Approach. FAA Order JO 7110.65, Para 7–4–4, Approaches to Multiple Runways. FAA Order JO 7110.65, Para 7–6–7, Sequencing. FAA Order JO 7110.65, Para 7–7–3, Separation.

7–4–3. CLEARANCE FOR VISUAL APPROACH

ARTCCs and approach controls may clear aircraft for visual approaches using the following procedures:

NOTE-

Towers may exercise this authority when authorized by a LOA with the facility that provides the IFR service, or by a facility directive at collocated facilities.

a. Controllers may initiate, or pilots may request, a visual approach even when an aircraft is being vectored for an instrument approach and the pilot subsequently reports:

2. The airport in sight at airports without a control tower.

b. Resolve potential conflicts with all other aircraft, advise an overtaking aircraft of the distance to the preceding aircraft and speed difference, and ensure that weather conditions at the airport are VFR or that the pilot has been informed that weather is not available for the destination airport. Upon pilot request, advise the pilot of the frequency to receive weather information where AWOS/ASOS is available.

REFERENCE-

FAA Order JO 7110.65, Para 7-2-1, Visual Separation.

c. Clear an aircraft for a visual approach when:

1. The aircraft is number one in the approach sequence, or

2. At locations with an operating control tower, the aircraft is to follow a preceding aircraft and the pilot reports the preceding aircraft in sight and is instructed to follow it to the same runway, or

NOTE-

The pilot need not report the airport/runway in sight.

3. At locations with an operating control tower, the pilot reports the airport or runway in sight but not the preceding aircraft. Radar separation must be maintained until visual separation is provided.

4. At locations without an operating control tower or where part–time towers are closed, do not specify a runway when issuing a visual approach clearance, issue a visual approach clearance to the airport only.

PHRASEOLOGY-

(at locations with an operating control tower)

(Call sign) (control instructions as required) CLEARED VISUAL APPROACH RUNWAY number);

or

(at locations without an operating control tower)

(Call sign) (control instructions as required) CLEARED VISUAL APPROACH TO (airport name)

(and if appropriate)

WEATHER NOT AVAILABLE

or

VERIFY THAT YOU HAVE THE (airport) WEATHER.

REFERENCE-

FAA Order JO 7110.65, Para 7-2-1, Visual Separation.

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-FAA Order JO 7110.65, Para 2–4–21, Description of Aircraft Types.

NOTE-

Visual separation is not authorized when the lead aircraft is a super.

REFERENCE-

FAA Order JO 7110.65, Para 7-2-1, Visual Separation.

e. Inform the tower of the aircraft's position prior to communications transfer at controlled airports. STARS functions may be used provided a facility directive or LOA specifies control and communication transfer points.

f. In addition to the requirements of paragraph 7–4–2, Vectors for Visual Approach, and subparagraphs a, b, c, d, and e, ensure that the location of the destination airport is provided when the pilot is asked to report the destination airport in sight.

g. In those instances where airports are located in close proximity, also provide the location of the airport that may cause the confusion.

EXAMPLE-

"Cessna Five Six November, Cleveland Burke Lakefront Airport is at 12 o'clock, 5 miles. Cleveland Hopkins Airport is at 1 o'clock 12 miles. Report Cleveland Hopkins in sight."

REFERENCE-

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

7-4-4. APPROACHES TO MULTIPLE RUNWAYS

a. All aircraft must be informed that approaches are being conducted to parallel, intersecting, or

converging runways. This may be accomplished through use of the ATIS.

b. When conducting visual approaches to multiple runways ensure the following:

1. Do not permit the respective aircrafts' primary radar targets/fusion target symbols to touch unless visual separation is being applied.

2. When the aircraft flight paths intersect, ensure approved separation is maintained until visual separation is applied.

c. The following conditions apply to visual approaches being conducted simultaneously to parallel, intersecting, and converging runways, as appropriate:

1. Parallel runways separated by less than 2,500 feet. Unless approved separation is provided, an aircraft must report sighting a preceding aircraft making an approach (instrument or visual) to the adjacent parallel runway. When an aircraft reports another aircraft in sight on the adjacent extended runway centerline and visual separation is applied, controllers must advise the succeeding aircraft to maintain visual separation. Do not permit an aircraft to overtake another aircraft when wake turbulence separation is required.

2. Parallel runways separated by 2,500 feet but less than 4,300 feet.

(a) When aircraft are approaching from opposite base legs, or one aircraft is turning to final and another aircraft is established on the extended centerline for the adjacent runway, approved separation is provided until the aircraft are:

(1) Established on a heading or established on a direct course to a fix or cleared on an RNAV/ instrument approach procedure which will intercept the extended centerline of the runway at an angle not greater than 30 degrees, and,

(2) One pilot has acknowledged receipt of a visual approach clearance and the other pilot has acknowledged receipt of a visual or instrument approach clearance.

(b) When aircraft are approaching from the same side of the airport and the lead aircraft is assigned the nearer runway, approved separation is maintained or pilot-applied visual separation is

provided by the succeeding aircraft until intercepting the farther adjacent runway extended centerline.

(c) Provided that aircraft flight paths do not intersect, when the provisions of subparagraphs (a), (b), or (d) are met, it is not necessary to apply any other type of separation with aircraft on the adjacent extended runway centerline.

(d) When aircraft are approaching from the same side of the airport and the lead aircraft is assigned the farther runway, the succeeding aircraft must be assigned a heading that will intercept the extended centerline of the nearer runway at an angle not greater than 30 degrees. Approved separation must be maintained or pilot-applied visual separation must be provided by the succeeding aircraft until it is established on the extended centerline of the nearer runway.

NOTE-

1. The intent of the 30 degree intercept angle is to reduce the potential for overshoots of the extended centerline of the runway and preclude side-by-side operations with one or both aircraft in a "belly-up" configuration during the turn. Aircraft performance, speed, and the number of degrees of the turn are factors to be considered when vectoring aircraft to parallel runways.

2. The 30-degree intercept angle is not necessary when approved separation is maintained until the aircraft are established on the extended centerline of the assigned runway.

3. Variances between heading assigned to intercept the extended centerline of the runway and aircraft ground track are expected due to the effect of wind and course corrections after completion of the turn and pilot acknowledgment of a visual approach clearance.

4. Procedures using Radius-to-Fix legs that intercept final may be used in lieu of the 30-degree intercept provisions contained in this paragraph.

3. Parallel runways separated by 4,300 feet or more.

(a) When aircraft are approaching from opposite base legs, or one aircraft is turning to final and another aircraft is established on the extended centerline for the adjacent runway, approved separation is provided until the aircraft are:

(1) Assigned a heading or established on a direct course to a fix or cleared on an RNAV/instrument approach procedure which will intercept the extended centerline of the runway at an angle not greater than 30 degrees, and,

(2) One of the aircraft has been issued and the pilot has acknowledged receipt of the visual approach clearance.

(b) When aircraft are approaching from the same side of the airport and the lead aircraft is assigned the nearer runway, approved separation is maintained or pilot-applied visual separation is provided by the succeeding aircraft until intercepting the farther adjacent runway extended centerline.

(c) Provided that aircraft flight paths do not intersect, when the provisions of subparagraphs (a), (b), or (d) are met, it is not necessary to apply any other type of separation with aircraft on the adjacent extended runway centerline.

(d) When aircraft are approaching from the same side of the airport and the lead aircraft is assigned the farther runway, the succeeding aircraft must be assigned a heading that will intercept the extended centerline of the nearer runway at an angle not greater than 30 degrees. Approved separation must be maintained or pilot–applied visual separation must be provided by the succeeding aircraft until it is established on the extended centerline of the nearer runway.

NOTE-

1. The intent of the 30 degree intercept angle is to reduce the potential for overshoots of the extended centerline of the runway and preclude side-by-side operations with one or both aircraft in a "belly-up" configuration during the turn. Aircraft performance, speed, and the number of degrees of the turn are factors to be considered when vectoring aircraft to parallel runways.

2. The 30-degree intercept angle is not necessary when approved separation is maintained until the aircraft are established on the extended centerline of the assigned runway.

3. Variances between heading assigned to intercept the extended centerline of the runway and aircraft ground track are expected due to the effect of wind and course corrections after completion of the turn and pilot acknowledgment of a visual approach clearance.

4. Procedures using Radius-to-Fix legs that intercept final may be used in lieu of 30-degree intercept provisions contained in this paragraph.

(e) Visual approaches may be conducted to one runway while visual or instrument approaches are conducted simultaneously to other runways, provided the conditions of subparagraph (a), (b), or (d) are met.

4. Intersecting and converging runways. Visual approaches may be conducted simultaneously with visual or instrument approaches to other runways, provided:

(a) Approved separation is maintained until the aircraft conducting the visual approach has been issued, and the pilot has acknowledged receipt of, the visual approach clearance.

(b) When aircraft flight paths intersect, approved separation must be maintained until visual separation is provided.

NOTE-

Although simultaneous approaches may be conducted to intersecting runways, staggered approaches may be necessary to meet the airport separation requirements specified in paragraph 3–10–4, Intersecting Runway/Intersecting Flight Path Separation.

REFERENCE-

FAA Order JO 7110.65, Para 7–7–3, Separation. FAA Order JO 7110.65, Para 7–8–3, Separation. FAA Order JO 7110.65, Para 7–9–4, Separation.

7–4–5. CHARTED VISUAL FLIGHT PROCEDURES (CVFP). USA/USN NOT APPLICABLE

Clear an aircraft for a CVFP only when the following conditions are met:

a. There is an operating control tower.

b. The published name of the CVFP and the landing runway are specified in the approach clearance, the reported ceiling at the airport of intended landing is at least 500 feet above the MVA/MIA, and the visibility is 3 miles or more, unless higher minimums are published for the particular CVFP.

c. When using parallel or intersecting/converging runways, the criteria specified in paragraph 7–4–4, Approaches to Multiple Runways, are applied.

d. An aircraft not following another aircraft on the approach reports sighting a charted visual landmark, or reports sighting a preceding aircraft landing on the same runway and has been instructed to follow that aircraft.

PHRASEOLOGY-

(Ident) CLEARED (name of CVFP) APPROACH.

7-4-6. 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 (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. Terminal Radar Service Area (TRSA) – Terminal

7-7-1. APPLICATION

Apply TRSA procedures within the designated TRSA in addition to the basic services described in Chapter 7, Visual, Section 6, Basic Radar Service to VFR Aircraft– Terminal.

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

7-7-2. ISSUANCE OF EFC

Inform the pilot when to expect further clearance when VFR aircraft are held either inside or outside the TRSA.

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

7-7-3. SEPARATION

Separate participating VFR aircraft from IFR aircraft and other participating VFR aircraft by any one of the following:

a. Visual separation, as specified in paragraph 7–2–1, Visual Separation, paragraph 7–4–2, Vectors for Visual Approach, and paragraph 7–6–7, Sequencing.

NOTE-

Issue wake turbulence cautionary advisories in accordance with paragraph 2–1–20, Wake Turbulence Cautionary Advisories.

b. 500 feet vertical separation.

c. Target resolution, except when ISR is being displayed.

NOTE-

Apply the provisions of paragraph 5-5-4, Minima, subparagraphs g and h, when wake turbulence separation is required.

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

7-7-4. HELICOPTER TRAFFIC

Helicopters need not be separated from other helicopters. Traffic information must be exchanged, as necessary.

REFERENCE-

FAA Order JO 7110.65, Para 7-2-1, Visual Separation.

7-7-5. ALTITUDE ASSIGNMENTS

a. Altitude information contained in a clearance, instruction, or advisory to VFR aircraft must meet MVA, MSA, or minimum IFR altitude criteria.

REFERENCE-

FAA Order JO 7110.65, Para 4–5–2, Flight Direction. FAA Order JO 7110.65, Para 4–5–3, Exceptions. FAA Order JO 7110.65, Para 4–5–6, Minimum En Route Altitudes.

b. If required, issue altitude assignments, consistent with the provisions of 14 CFR Section 91.119.

NOTE-

The MSAs are: **1.** Over congested areas, an altitude at least 1,000 feet above the highest obstacle; and

2. Over other than congested areas, an altitude at least 500 feet above the surface.

c. When necessary to assign an altitude for separation purposes to VFR aircraft contrary to 14 CFR Section 91.159, advise the aircraft to resume altitudes appropriate for the direction of flight when the altitude assignment is no longer needed for separation or when leaving the TRSA.

PHRASEOLOGY-

RESUME APPROPRIATE VFR ALTITUDES.

REFERENCE-

FAA Order JO 7110.65, Para 4–8–11, Practice Approaches. FAA Order JO 7110.65, Para 5–6–1, Application. FAA Order JO 7110.65, Para 7–2–1, Visual Separation.

7-7-6. APPROACH INTERVAL

The tower must specify the approach interval.

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

7-7-7. TRSA DEPARTURE INFORMATION

a. At controlled airports within the TRSA, inform a departing aircraft proposing to operate within the TRSA when to contact departure control and the frequency to use. If the aircraft is properly equipped, ground control or clearance delivery must issue the appropriate beacon code.

NOTE-

Departing aircraft are assumed to want TRSA service unless the pilot states, "negative TRSA service," or makes a similar comment. Pilots are expected to inform the controller of intended destination and/or route of flight and altitude.

b. Provide separation until the aircraft leaves the TRSA.

c. Inform participating VFR aircraft when leaving the TRSA.

PHRASEOLOGY-

LEAVING THE (name) TRSA,

and as appropriate,

RESUME OWN NAVIGATION, REMAIN THIS FREQUENCY FOR TRAFFIC ADVISORIES, RADAR SERVICE TERMINATED, SQUAWK ONE TWO ZERO ZERO. **d.** Aircraft departing satellite controlled airports that will penetrate the TRSA should be provided the same service as those aircraft departing the primary airport. Procedures for handling this situation must be covered in a letter of agreement or facility directives, as appropriate.

e. Procedures for handling aircraft departing uncontrolled satellite airports must be advertised in a facility bulletin and service provided accordingly.

REFERENCE-

FAA Order JO 7110.65, Para 7-2-1, Visual Separation.

Section 3. Special Use, ATC–Assigned Airspace, and Stationary ALTRVs

9-3-1. APPLICATION

Apply the procedures in this section to aircraft operating in proximity to special use, ATC-assigned airspace (ATCAA), and stationary ALTRVs unless the airspace is designated an alert area/controlled firing area or one of the following conditions exist:

NOTE-

These procedures are not applicable to Alert Areas or Controlled Firing Areas.

REFERENCE-

P/CG Term - Special Use Airspace.

a. The pilot informs you that permission has been obtained from the using agency to operate in the airspace.

b. The using agency informs you they have given permission for the aircraft to operate in the airspace.

NOTE-

Using agency permission may be relayed to the pilot.

c. The restricted/warning area, MOA, ATCAA, or stationary ALTRV has been released to the controlling agency.

d. The aircraft is on an approved ALTRV, unless the airspace area in question is an ATCAA.

NOTE-

Mission project officers are responsible for obtaining approval for ALTRV operations within prohibited/ restricted/warning areas, MOAs, and stationary ALTRVs.

REFERENCE-

FAA Order JO 7110.65, Para 9-3-4, Transiting Active SUA/ATCAA.

e. Operations in special use airspace and stationary ALTRVs located in offshore/oceanic airspace will be conducted in accordance with the procedures in Chapter 8, Offshore/Oceanic Procedures.

9-3-2. SEPARATION MINIMA

Unless clearance of nonparticipating aircraft in/ through/adjacent to a prohibited/restricted/warning area/MOA/ATCAA/stationary ALTRV is provided for in a letter of agreement (LOA) or letter of procedure (LOP), separate nonparticipating aircraft from active special use airspace, ATCAAs, and stationary ALTRVs by the following minima:

NOTE-

Nonparticipating aircraft refers to those aircraft for which you have separation responsibility and which have not been authorized by the using agency to operate in/through the special use airspace, ATCAA, or stationary ALTRV. VFR traffic is not prohibited from transiting stationary ALTRVs or transitional hazard areas (THA).

a. Assign an altitude consistent with paragraph 4–5–2, Flight Direction, and 4–5–3, Exceptions, which is at least 500 feet (above FL 290-1000 feet) above/below the upper/lower limit of the prohibited/ restricted/warning area/MOA/ATCAA/stationary ALTRV.

REFERENCE-

FAA Order JO 7210.3, Para 2-1-18, Prohibited/Restricted Areas and Stationary ALTRVs.

b. Provide radar separation of 3 miles (FL 600 and above – 6 miles) from the special use airspace, ATCAA, or stationary ALTRV peripheral boundary. EXCEPTIONS:

1. Some prohibited/restricted/warning areas are established for security reasons or to contain hazardous activities and do not require radar separation of 3 miles (FL 600 and above – 6 miles) from the special use airspace. Where facility management has identified these areas as outlined in FAA Order JO 7210.3, Facility Operation and Administration, vector aircraft to remain clear of the peripheral boundary.

2. For stationary ALTRVs issued for the purpose of space launch or reentry operations, ensure aircraft remain clear of the peripheral boundary.

c. Clear aircraft on airways or routes whose widths or protected airspace do not overlap the peripheral boundary.

d. For stationary ALTRVs and temporary flight restrictions (TFR) issued for the purpose of space launch or reentry operations to protect aircraft hazard areas (AHA):

1. Do not allow nonparticipating aircraft to operate in an AHA unless real-time notifications of the actual start of activity and end of activity of the AHA is provided to affected facilities via ATO Space Operations coordination.

2. Do not provide ATC services to aircraft at airports that lie within an AHA unless real-time

notifications of the actual start of activity and end of activity of the AHA is provided to affected facilities via ATO Space Operations coordination.

REFERENCE-

FAA Order JO 7210.3, Para 20–6–4, Airports within Aircraft Hazard Areas and Transitional Hazard Areas.

e. For NOTAMs issued for the purpose of space launch or reentry operations to protect THAs:

1. Aircraft may enter provided they are not holding, loitering, or hovering, and are cleared on:

(a) Routing approved by ATO Space Operations that has an angular difference of 30 through 150 degrees from the launch/reentry course, or

(b) Crossing courses that have an angular difference of 45 through 135 degrees from the launch/reentry course.

NOTE-

The intent is to provide a crossing angle that accounts for the effects of wind.

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

2. Do not provide ATC services to aircraft at airports that lie within a THA unless real-time notifications of the actual start of activity and end of activity of the THA is provided to affected facilities via ATO Space Operations coordination.

REFERENCE-

FAA Order JO 7210.3, Para 20–6–4, Airports within Aircraft Hazard Areas and Transitional Hazard Areas.

9-3-3. VFR-ON-TOP

If the aircraft's route, track, or altitude may cause it to enter an active Prohibited/Restricted/Warning Area, MOA, or ATCAA:

a. Inform the pilot to conduct flight "VFR–on– top" at least 500 feet above the upper limit or below the lower limit of the airspace (subject to paragraph 7-3-1, VFR–on–top); or

PHRASEOLOGY-

MAINTAIN VFR-ON-TOP AT LEAST 500 FEET ABOVE/BELOW (upper/lower limit of airspace) ACROSS (name or number of airspace) BETWEEN (fix) AND (fix);

and if the airspace is an ATCAA,

(name of ATCAA) IS ATC ASSIGNED AIRSPACE.

REFERENCE-

FAA Order JO 7110.65, Para 7-1-1, Class A Airspace Restrictions.

b. Clear the aircraft via a routing which provides approved separation from the airspace.

c. *Exception:* Some Prohibited/Restricted Areas are established for security reasons or to contain hazardous activities not involving aircraft operations. The addition of 500 (or 1,000) feet to the upper/lower limit of these Prohibited/Restricted Areas is not required if the areas have been identified by facility management.

REFERENCE– FAA Order JO 7210.3, Para 2–1–18, Prohibited/Restricted Areas.

9-3-4. TRANSITING ACTIVE SUA/ATCAA

If a LOA/LOP has been coordinated with the Using Agency and permission has been granted to transit the area:

a. Comply with the instruction/clearances issued by the Using Agency and provide the applicable separation minima between aircraft when two or more aircraft are transiting the area; or

NOTE-

Some Using Agencies are also air traffic control facilities.

b. If unable to comply with instructions/clearances, clear the aircraft in accordance with paragraph 9–3–2, Separation Minima.

NOTE-

The FAA has no jurisdictional authority over the use of nonjoint use prohibited/restricted/warning area airspace; therefore, clearance cannot be issued for flight therein without the appropriate approval.

Chapter 13. Decision Support Tools

Section 1. ERAM – En Route

13-1-1. DESCRIPTION

En Route Decision Support Tool (EDST) is an integrated function of ERAM that is used by the sector team in performing its strategic planning responsibilities. EDST uses flight plan data, forecast winds, aircraft performance characteristics, and track data to derive expected aircraft trajectories, and to predict conflicts between aircraft and between aircraft and special use or designated airspace. It also provides trial planning and enhanced flight data management capabilities.

13–1–2. CONFLICT DETECTION AND RESOLUTION

a. Actively scan EDST information for predicted aircraft-to-aircraft and aircraft-to-airspace alerts.

b. When a conflict probe alert is displayed, evaluate the alert and take appropriate action as early as practical, in accordance with duty priorities.

c. Prioritize the evaluation and resolution of conflict probe alerts to ensure the safe, expeditious, and efficient flow of air traffic.

NOTE-

Conflict probe alerts are based on approved radar separation. Conflict probe does not account for instances in which greater separation may be needed (e.g., non-standard formations, A380) or where reduced separation is permitted (e.g., 3 mile airspace).

d. When a conflict probe alert is displayed and when sector priorities permit, give consideration to the following in determining a solution:

1. Solutions that involve direct routing, altitude changes, removal of a flight direction constraint (i.e., inappropriate altitude for direction of flight), and/or removal of a static restriction for one or more pertinent aircraft.

2. Impact on surrounding sector traffic and complexity levels, flight efficiencies, and user preferences.

e. When the Stop Probe feature is activated for an aircraft, conflict probe for that aircraft shall be

restarted before transfer of control, unless otherwise coordinated.

NOTE-

The requirement in subparagraph 13–1–2e does not apply to aircraft entering a non EDST facility.

13-1-3. TRIAL PLANNING

When EDST is operational at the sector and when sector priorities permit, use the trial plan capability to evaluate:

a. Solutions to predicted conflicts.

b. The feasibility of granting user requests.

c. The feasibility of removing a flight direction constraint (i.e., inappropriate altitude for direction of flight) for an aircraft.

d. The feasibility of removing a static restriction for an aircraft.

13–1–4. CONFLICT PROBE-BASED CLEARANCES

When the results of a trial plan based upon a user request indicate the absence of alerts, every effort should be made to grant the user request, unless the change is likely to adversely affect operations at another sector.

13–1–5. THE AIRCRAFT LIST (ACL), DEPARTURE LIST (DL) AND FLIGHT DATA MANAGEMENT

a. The ACL must be used as the sector team's primary source of flight data.

b. Actively scan EDST to identify automated notifications that require sector team action.

c. When an ACL or DL entry has a Remarks indication, the Remarks field of the flight plan must be reviewed. Changes to the Remarks field must also be reviewed.

d. Highlighting an entry on the ACL or DL must be used to indicate the flight requires an action or special attention.

e. The Special Posting Area (SPA) should be used to group aircraft that have special significance (e.g., aircraft to be sequenced, air refueling missions, formations).

f. Sector teams shall post flight progress strips for any non-radar flights.

g. A flight progress strip shall be posted for any flight plan not contained in the EAS.

h. Sector teams shall post any flight progress strip(s) that are deemed necessary for safe or efficient operations. The sector team shall comply with all applicable facility directives to maintain posted flight progress strips.

i. The Drop Track Delete option shall be used in accordance with facility directives.

13–1–6. MANUAL COORDINATION AND THE COORDINATION MENU

a. Where automated coordination with a facility is not available (e.g., an international facility, a VFR tower), use the Coordination Menu or a flight progress strip to annotate manual coordination status, in accordance with facility directives.

b. When the Coordination Menu is used and the flight plan is subsequently changed, remove the yellow coding from the Coordination Indicator after any appropriate action has been taken.

13-1-7. HOLDING

For flights in hold, use the Hold View, Hold Data Menu, hold message, a flight progress strip, or a facility approved worksheet, to annotate holding instructions, in accordance with facility directives.

13-1-8. RECORDING OF CONTROL DATA

a. All control information not otherwise recorded via automation recordings or voice recordings must be manually recorded using approved methods.

b. When a verbal point out has been approved, remove the yellow color coding on the ACL.

c. When the ACL or DL Free Text Area is used to enter control information, authorized abbreviations must be used. You may use:

1. The clearance abbreviations authorized in TBL 13–1–1.

Abbreviation	Meaning
А	Cleared to airport (point of intended landing)
В	Center clearance delivered
С	ATC clears (when clearance relayed through non-ATC facility)
CAF	Cleared as filed
D	Cleared to depart from the fix
F	Cleared to the fix
Н	Cleared to hold and instructions issued
Ν	Clearance not delivered
0	Cleared to the outer marker
PD	Cleared to climb/descend at pilot's discretion
Q	Cleared to fly specified sectors of a NAVAID defined in terms of courses, bearings, radials, or quadrants within a designated radius
Т	Cleared through (for landing and takeoff through intermediate point)
V	Cleared over the fix
Х	Cleared to cross (airway, route, radial) at (point)
Z	Tower jurisdiction

TBL 13–1–1 Clearance Abbreviations

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PILOT/CONTROLLER GLOSSARY

PURPOSE

a. This Glossary was compiled to promote a common understanding of the terms used in the Air Traffic Control system. It includes those terms which are intended for pilot/controller communications. Those terms most frequently used in pilot/controller communications are printed in *bold italics*. The definitions are primarily defined in an operational sense applicable to both users and operators of the National Airspace System. Use of the Glossary will preclude any misunderstandings concerning the system's design, function, and purpose.

b. Because of the international nature of flying, terms used in the Lexicon, published by the International Civil Aviation Organization (ICAO), are included when they differ from FAA definitions. These terms are followed by "[ICAO]." For the reader's convenience, there are also cross references to related terms in other parts of the Glossary and to other documents, such as the Code of Federal Regulations (CFR) and the Aeronautical Information Manual (AIM).

c. This Glossary will be revised, as necessary, to maintain a common understanding of the system.

EXPLANATION OF CHANGES

- d. Terms Added: CALIBRATED AIRSPEED NATIONAL SECURITY AREA REDUCED VERTICAL SEPARATION MINIMUM (RVSM) AIRSPACE
- e. Terms Modified: SPECIAL USE AIRSPACE

f. Editorial/format changes were made where necessary. Revision bars were not used due to the insignificant nature of the changes.

11/3/22

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CALCULATED LANDING TIME- A term that may be used in place of tentative or actual calculated landing time, whichever applies.

CALIBRATED AIRSPEED (CAS) – The indicated airspeed of an aircraft, corrected for position and instrument error. Calibrated airspeed is equal to true airspeed in standard atmosphere at sea level.

CALL FOR RELEASE– Wherein the overlying ARTCC requires a terminal facility to initiate verbal coordination to secure ARTCC approval for release of a departure into the en route environment.

CALL UP– Initial voice contact between a facility and an aircraft, using the identification of the unit being called and the unit initiating the call.

(Refer to AIM.)

CANADIAN MINIMUM NAVIGATION PERFOR-MANCE SPECIFICATION AIRSPACE– That portion of Canadian domestic airspace within which MNPS separation may be applied.

CARDINAL ALTITUDES- "Odd" or "Even" thousand-foot altitudes or flight levels; e.g., 5,000, 6,000, 7,000, FL 250, FL 260, FL 270.

(See ALTITUDE.) (See FLIGHT LEVEL.)

CARDINAL FLIGHT LEVELS-(See CARDINAL ALTITUDES.)

CAT-

(See CLEAR-AIR TURBULENCE.)

CATCH POINT- A fix/waypoint that serves as a transition point from the high altitude waypoint navigation structure to an arrival procedure (STAR) or the low altitude ground-based navigation structure.

CEILING- The heights above the earth's surface of the lowest layer of clouds or obscuring phenomena that is reported as "broken," "overcast," or "obscuration," and not classified as "thin" or "partial."

(See ICAO term CEILING.)

CEILING [ICAO]– The height above the ground or water of the base of the lowest layer of cloud below

6,000 meters (20,000 feet) covering more than half the sky.

CENTER-

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(See AIR ROUTE TRAFFIC CONTROL CENTER.)
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CENTER'S AREA– The specified airspace within which an air route traffic control center (ARTCC) provides air traffic control and advisory service.

(See AIR ROUTE TRAFFIC CONTROL CENTER.) (Refer to AIM.)

CENTER WEATHER ADVISORY– An unscheduled weather advisory issued by Center Weather Service Unit meteorologists for ATC use to alert pilots of existing or anticipated adverse weather conditions within the next 2 hours. A CWA may modify or redefine a SIGMET.

(See AIRMET.) (See CONVECTIVE SIGMET.) (See SAW.) (See SIGMET.) (Refer to AIM.)

CENTRAL EAST PACIFIC- An organized route system between the U.S. West Coast and Hawaii.

CEP-

(See CENTRAL EAST PACIFIC.)

CERAP-

(See COMBINED CENTER-RAPCON.)

CERTIFICATE OF WAIVER OR AUTHORIZA-TION (COA)– An FAA grant of approval for a specific flight operation or airspace authorization or waiver.

CERTIFIED TOWER RADAR DISPLAY (CTRD)– An FAA radar display certified for use in the NAS.

CFR-

(See CALL FOR RELEASE.)

CHA

(See CONTINGENCY HAZARD AREA)

CHAFF– Thin, narrow metallic reflectors of various lengths and frequency responses, used to reflect radar energy. These reflectors, when dropped from aircraft and allowed to drift downward, result in large targets on the radar display. CHART SUPPLEMENT U.S.– A publication designed primarily as a pilot's operational manual containing all airports, seaplane bases, and heliports open to the public including communications data, navigational facilities, and certain special notices and procedures. This publication is issued in seven volumes according to geographical area.

CHARTED VFR FLYWAYS– Charted VFR Flyways are flight paths recommended for use to bypass areas heavily traversed by large turbine-powered aircraft. Pilot compliance with recommended flyways and associated altitudes is strictly voluntary. VFR Flyway Planning charts are published on the back of existing VFR Terminal Area charts.

CHARTED VISUAL FLIGHT PROCEDURE APPROACH– An approach conducted while operating on an instrument flight rules (IFR) flight plan which authorizes the pilot of an aircraft to proceed visually and clear of clouds to the airport via visual landmarks and other information depicted on a charted visual flight procedure. This approach must be authorized and under the control of the appropriate air traffic control facility. Weather minimums required are depicted on the chart.

CHASE – An aircraft flown in proximity to another aircraft normally to observe its performance during training or testing.

CHASE AIRCRAFT-(See CHASE.)

CHOP- A form of turbulence.

a. Light Chop– Turbulence that causes slight, rapid and somewhat rhythmic bumpiness without appreciable changes in altitude or attitude.

b. Moderate Chop– Turbulence similar to Light Chop but of greater intensity. It causes rapid bumps or jolts without appreciable changes in aircraft altitude or attitude.

(See TURBULENCE.)

CIRCLE-TO-LAND MANEUVER- A maneuver initiated by the pilot to align the aircraft with a runway for landing when a straight-in landing from an instrument approach is not possible or is not desirable. At tower controlled airports, this maneuver is made only after ATC authorization has been obtained and the pilot has established required visual reference to the airport.

(See CIRCLE TO RUNWAY.) (See LANDING MINIMUMS.) (Refer to AIM.)

CIRCLE TO RUNWAY (RUNWAY NUMBER)– Used by ATC to inform the pilot that he/she must circle to land because the runway in use is other than the runway aligned with the instrument approach procedure. When the direction of the circling maneuver in relation to the airport/runway is required, the controller will state the direction (eight cardinal compass points) and specify a left or right downwind or base leg as appropriate; e.g., "Cleared VOR Runway Three Six Approach circle to Runway Two Two," or "Circle northwest of the airport for a right downwind to Runway Two Two."

(See CIRCLE-TO-LAND MANEUVER.) (See LANDING MINIMUMS.) (Refer to AIM.)

CIRCLING APPROACH-(See CIRCLE-TO-LAND MANEUVER.)

CIRCLING MANEUVER-(See CIRCLE-TO-LAND MANEUVER.)

CIRCLING MINIMA– (See LANDING MINIMUMS.)

CLASS A AIRSPACE– (See CONTROLLED AIRSPACE.)

- CLASS B AIRSPACE-(See CONTROLLED AIRSPACE.)
- CLASS C AIRSPACE-(See CONTROLLED AIRSPACE.)
- CLASS D AIRSPACE-(See CONTROLLED AIRSPACE.)

CLASS E AIRSPACE– (See CONTROLLED AIRSPACE.)

CLASS G AIRSPACE– Airspace that is not designated in 14 CFR Part 71 as Class A, Class B, Class C, Class D, or Class E controlled airspace is Class G (uncontrolled) airspace.

(See UNCONTROLLED AIRSPACE.)

CLEAR AIR TURBULENCE (CAT)– Turbulence encountered in air where no clouds are present. This term is commonly applied to high-level turbulence associated with wind shear. CAT is often encountered in the vicinity of the jet stream.

(See WIND SHEAR.) (See JET STREAM.)

CLEAR OF THE RUNWAY-

a. Taxiing aircraft, which is approaching a runway, is clear of the runway when all parts of the aircraft are held short of the applicable runway holding position marking.

b. A pilot or controller may consider an aircraft, which is exiting or crossing a runway, to be clear of the runway when all parts of the aircraft are beyond the runway edge and there are no restrictions to its continued movement beyond the applicable runway holding position marking.

c. Pilots and controllers shall exercise good judgment to ensure that adequate separation exists between all aircraft on runways and taxiways at airports with inadequate runway edge lines or holding position markings.

CLEARANCE-

(See AIR TRAFFIC CLEARANCE.)

CLEARANCE LIMIT– The fix, point, or location to which an aircraft is cleared when issued an air traffic clearance.

(See ICAO term CLEARANCE LIMIT.)

CLEARANCE LIMIT [ICAO] – The point to which an aircraft is granted an air traffic control clearance.

CLEARANCE VOID IF NOT OFF BY (TIME)– Used by ATC to advise an aircraft that the departure release is automatically canceled if takeoff is not made prior to a specified time. The expiration of a clearance void time does not cancel the departure clearance or IFR flight plan. It withdraws the pilot's authority to depart IFR until a new departure release/release time has been issued by ATC. Pilots who choose to depart VFR after their clearance void time has expired should not depart using the previously assigned IFR transponder code.

(See ICAO term CLEARANCE VOID TIME.)

CLEARANCE VOID TIME [ICAO]– A time specified by an air traffic control unit at which a clearance ceases to be valid unless the aircraft concerned has already taken action to comply therewith.

CLEARED APPROACH– ATC authorization for an aircraft to execute any standard or special instrument approach procedure for that airport. Normally, an

aircraft will be cleared for a specific instrument approach procedure.

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(See CLEARED (Type of) APPROACH.)
(See INSTRUMENT APPROACH
PROCEDURE.)
(Refer to 14 CFR Part 91.)
(Refer to AIM.)
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CLEARED (Type of) APPROACH– ATC authorization for an aircraft to execute a specific instrument approach procedure to an airport; e.g., "Cleared ILS Runway Three Six Approach."

(See APPROACH CLEARANCE.) (See INSTRUMENT APPROACH PROCEDURE.) (Refer to 14 CFR Part 91.) (Refer to AIM.)

CLEARED AS FILED– Means the aircraft is cleared to proceed in accordance with the route of flight filed in the flight plan. This clearance does not include the altitude, DP, or DP Transition.

(See REQUEST FULL ROUTE CLEARANCE.) (Refer to AIM.)

CLEARED FOR TAKEOFF – ATC authorization for an aircraft to depart. It is predicated on known traffic and known physical airport conditions.

CLEARED FOR THE OPTION– ATC authorization for an aircraft to make a touch-and-go, low approach, missed approach, stop and go, or full stop landing at the discretion of the pilot. It is normally used in training so that an instructor can evaluate a student's performance under changing situations. Pilots should advise ATC if they decide to remain on the runway, of any delay in their stop and go, delay clearing the runway, or are unable to comply with the instruction(s).

(See OPTION APPROACH.) (Refer to AIM.)

CLEARED THROUGH – ATC authorization for an aircraft to make intermediate stops at specified airports without refiling a flight plan while en route to the clearance limit.

CLEARED TO LAND – ATC authorization for an aircraft to land. It is predicated on known traffic and known physical airport conditions.

CLEARWAY– An area beyond the takeoff runway under the control of airport authorities within which terrain or fixed obstacles may not extend above specified limits. These areas may be required for certain turbine-powered operations and the size and upward slope of the clearway will differ depending on when the aircraft was certificated.

(Refer to 14 CFR Part 1.)

CLIMB TO VFR– ATC authorization for an aircraft to climb to VFR conditions within Class B, C, D, and E surface areas when the only weather limitation is restricted visibility. The aircraft must remain clear of clouds while climbing to VFR.

(See SPECIAL VFR CONDITIONS.) (Refer to AIM.)

CLIMBOUT– That portion of flight operation between takeoff and the initial cruising altitude.

CLIMB VIA– An abbreviated ATC clearance that requires compliance with the procedure lateral path, associated speed restrictions, and altitude restrictions along the cleared route or procedure.

CLOSE PARALLEL RUNWAYS– Two parallel runways whose extended centerlines are separated by less than 4,300 feet and at least 3000 feet (750 feet for SOIA operations) for which ATC is authorized to conduct simultaneous independent approach operations. PRM and simultaneous close parallel appear in approach title. Dual communications, special pilot training, an Attention All Users Page (AAUP), NTZ monitoring by displays that have aural and visual alerting algorithms are required. A high update rate surveillance sensor is required for certain runway or approach course spacing.

CLOSED LOOP CLEARANCE- A vector or reroute clearance that includes a return to route point and updates ERAM to accurately reflect the anticipated route (e.g., a QU route pick that anticipates length of vector and includes the next fix that ties into the route of flight.)

CLOSED RUNWAY- A runway that is unusable for aircraft operations. Only the airport management/ military operations office can close a runway.

CLOSED TRAFFIC- Successive operations involving takeoffs and landings or low approaches where the aircraft does not exit the traffic pattern.

CLOUD- A cloud is a visible accumulation of minute water droplets and/or ice particles in the atmosphere above the Earth's surface. Cloud differs from ground fog, fog, or ice fog only in that the latter are, by definition, in contact with the Earth's surface.

CLT-

(See CALCULATED LANDING TIME.)

CLUTTER– In radar operations, clutter refers to the reception and visual display of radar returns caused by precipitation, chaff, terrain, numerous aircraft targets, or other phenomena. Such returns may limit or preclude ATC from providing services based on radar.

(See CHAFF.) (See GROUND CLUTTER.) (See PRECIPITATION.) (See TARGET.) (See ICAO term RADAR CLUTTER.)

CMNPS-

(See CANADIAN MINIMUM NAVIGATION PERFORMANCE SPECIFICATION AIRSPACE.)

COA-

(See CERTIFICATE OF WAIVER OR AUTHORIZATION.)

COASTAL FIX- A navigation aid or intersection where an aircraft transitions between the domestic route structure and the oceanic route structure.

CODES- The number assigned to a particular multiple pulse reply signal transmitted by a transponder.

(See DISCRETE CODE.)

COLD TEMPERATURE CORRECTION- A correction in feet, based on height above airport and temperature, that is added to the aircraft's indicated altitude to offset the effect of cold temperature on true altitude.

COLLABORATIVE TRAJECTORY OPTIONS PROGRAM (CTOP)– CTOP is a traffic management program administered by the Air Traffic Control System Command Center (ATCSCC) that manages demand through constrained airspace, while considering operator preference with regard to both route and delay as defined in a Trajectory Options Set (TOS).

COMBINED CENTER-RAPCON– An air traffic facility which combines the functions of an ARTCC and a radar approach control facility.

(See AIR ROUTE TRAFFIC CONTROL CENTER.) (See RADAR APPROACH CONTROL FACILITY.)

COMMON POINT- A significant point over which two or more aircraft will report passing or have

reported passing before proceeding on the same or diverging tracks. To establish/maintain longitudinal separation, a controller may determine a common point not originally in the aircraft's flight plan and then clear the aircraft to fly over the point.

(See SIGNIFICANT POINT.)

COMMON PORTION-

(See COMMON ROUTE.)

COMMON ROUTE- That segment of a North American Route between the inland navigation facility and the coastal fix.

OR

COMMON ROUTE-(See SEGMENTS OF A SID/STAR)

COMMON TRAFFIC ADVISORY FREQUENCY (CTAF)– A frequency designed for the purpose of carrying out airport advisory practices while operating to or from an airport without an operating control tower. The CTAF may be a UNICOM, Multicom, FSS, or tower frequency and is identified in appropriate aeronautical publications.

(See DESIGNATED COMMON TRAFFIC ADVISORY FREQUENCY (CTAF) AREA.) (Refer to AC 90-66, Non–Towered Airport Flight Operations.)

COMPASS LOCATOR- A low power, low or medium frequency (L/MF) radio beacon installed at the site of the outer or middle marker of an instrument landing system (ILS). It can be used for navigation at distances of approximately 15 miles or as authorized in the approach procedure.

a. Outer Compass Locator (LOM)– A compass locator installed at the site of the outer marker of an instrument landing system.

(See OUTER MARKER.)

b. Middle Compass Locator (LMM)– A compass locator installed at the site of the middle marker of an instrument landing system.

(See MIDDLE MARKER.) (See ICAO term LOCATOR.)

COMPASS ROSE– A circle, graduated in degrees, printed on some charts or marked on the ground at an airport. It is used as a reference to either true or magnetic direction.

COMPLY WITH RESTRICTIONS – An ATC instruction that requires an aircraft being vectored

back onto an arrival or departure procedure to comply with all altitude and/or speed restrictions depicted on the procedure. This term may be used in lieu of repeating each remaining restriction that appears on the procedure.

COMPOSITE FLIGHT PLAN– A flight plan which specifies VFR operation for one portion of flight and IFR for another portion. It is used primarily in military operations.

(Refer to AIM.)

COMPULSORY REPORTING POINTS- Reporting points which must be reported to ATC. They are designated on aeronautical charts by solid triangles or filed in a flight plan as fixes selected to define direct routes. These points are geographical locations which are defined by navigation aids/fixes. Pilots should discontinue position reporting over compulsory reporting points when informed by ATC that their aircraft is in "radar contact."

COMPUTER NAVIGATION FIX (CNF)- A Computer Navigation Fix is a point defined by a latitude/longitude coordinate and is required to support Performance-Based Navigation (PBN) operations. A five-letter identifier denoting a CNF can be found next to an "x" on en route charts and on some approach charts. Eventually, all CNFs will be labeled and begin with the letters "CF" followed by three consonants (e.g., 'CFWBG'). CNFs are not recognized by ATC, are not contained in ATC fix or automation databases, and are not used for ATC purposes. Pilots should not use CNFs for point-topoint navigation (e.g., proceed direct), filing a flight plan, or in aircraft/ATC communications. Use of CNFs has not been adopted or recognized by the International Civil Aviation Organization (ICAO).

(REFER to AIM 1–1–17b5(i)(2), Global Positioning System (GPS).

CONDITIONS NOT MONITORED- When an airport operator cannot monitor the condition of the movement area or airfield surface area, this information is issued as a NOTAM. Usually necessitated due to staffing, operating hours or other mitigating factors associated with airport operations.

CONFIDENCE MANEUVER– A confidence maneuver consists of one or more turns, a climb or descent, or other maneuver to determine if the pilot in command (PIC) is able to receive and comply with ATC instructions. CONFLICT ALERT– A function of certain air traffic control automated systems designed to alert radar controllers to existing or pending situations between tracked targets (known IFR or VFR aircraft) that require his/her immediate attention/action.

(See MODE C INTRUDER ALERT.)

CONFLICT RESOLUTION– The resolution of potential conflictions between aircraft that are radar identified and in communication with ATC by ensuring that radar targets do not touch. Pertinent traffic advisories shall be issued when this procedure is applied.

Note: This procedure shall not be provided utilizing mosaic radar systems.

CONFORMANCE– The condition established when an aircraft's actual position is within the conformance region constructed around that aircraft at its position, according to the trajectory associated with the aircraft's Current Plan.

CONFORMANCE REGION– A volume, bounded laterally, vertically, and longitudinally, within which an aircraft must be at a given time in order to be in conformance with the Current Plan Trajectory for that aircraft. At a given time, the conformance region is determined by the simultaneous application of the lateral, vertical, and longitudinal conformance bounds for the aircraft at the position defined by time and aircraft's trajectory.

CONSOLAN- A low frequency, long-distance NAVAID used principally for transoceanic navigations.

CONSOLIDATED WAKE TURBULENCE (CWT)– A version of RECAT that has nine categories, A through I, that refines the grouping of aircraft while optimizing wake turbulence separation.

CONSTRAINT SATISFACTION POINT (CSP)– Meter Reference Elements (MREs) that are actively scheduled by TBFM. Constraint satisfaction occurs when the Scheduled Time of Arrival generated for each metered flight conforms to all the scheduling constraints specified at all the applicable CSPs.

CONTACT-

a. Establish communication with (followed by the name of the facility and, if appropriate, the frequency to be used).

b. A flight condition wherein the pilot ascertains the attitude of his/her aircraft and navigates by visual reference to the surface.

(See CONTACT APPROACH.) (See RADAR CONTACT.)

CONTACT APPROACH– An approach wherein an aircraft on an IFR flight plan, having an air traffic control authorization, operating clear of clouds with at least 1 mile flight visibility and a reasonable expectation of continuing to the destination airport in those conditions, may deviate from the instrument approach procedure and proceed to the destination airport by visual reference to the surface. This approach will only be authorized when requested by the pilot and the reported ground visibility at the destination airport is at least 1 statute mile.

(Refer to AIM.)

CONTAMINATED RUNWAY– A runway is considered contaminated whenever standing water, ice, snow, slush, frost in any form, heavy rubber, or other substances are present. A runway is contaminated with respect to rubber deposits or other friction-degrading substances when the average friction value for any 500-foot segment of the runway within the ALD fails below the recommended minimum friction level and the average friction value in the adjacent 500-foot segments falls below the maintenance planning friction level.

CONTERMINOUS U.S.– The 48 adjoining States and the District of Columbia.

CONTINENTAL UNITED STATES – The 49 States located on the continent of North America and the District of Columbia.

CONTINGENCY HAZARD AREA (CHA)– Used by ATC. Areas of airspace that are defined and distributed in advance of a launch or reentry operation and are activated in response to a failure.

(See AIRCRAFT HAZARD AREA.) (See REFINED HAZARD AREA.) (See TRANSITIONAL HAZARD AREA.)

CONTINUE- When used as a control instruction should be followed by another word or words clarifying what is expected of the pilot. Example: "continue taxi," "continue descent," "continue inbound," etc.

CONTROL AREA [ICAO]– A controlled airspace extending upwards from a specified limit above the earth.

Pilot/Controller Glossary

CONTROL SECTOR– An airspace area of defined horizontal and vertical dimensions for which a controller or group of controllers has air traffic control responsibility, normally within an air route traffic control center or an approach control facility. Sectors are established based on predominant traffic flows, altitude strata, and controller workload. Pilot communications during operations within a sector are normally maintained on discrete frequencies assigned to the sector.

(See DISCRETE FREQUENCY.)

CONTROL SLASH– A radar beacon slash representing the actual position of the associated aircraft. Normally, the control slash is the one closest to the interrogating radar beacon site. When ARTCC radar is operating in narrowband (digitized) mode, the control slash is converted to a target symbol.

CONTROLLED AIRSPACE– An airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification.

a. Controlled airspace is a generic term that covers Class A, Class B, Class C, Class D, and Class E airspace.

b. Controlled airspace is also that airspace within which all aircraft operators are subject to certain pilot qualifications, operating rules, and equipment requirements in 14 CFR Part 91 (for specific operating requirements, please refer to 14 CFR Part 91). For IFR operations in any class of controlled airspace, a pilot must file an IFR flight plan and receive an appropriate ATC clearance. Each Class B, Class C, and Class D airspace area designated for an airport contains at least one primary airport around which the airspace is designated (for specific designations and descriptions of the airspace classes, please refer to 14 CFR Part 71).

c. Controlled airspace in the United States is designated as follows:

1. CLASS A– Generally, that airspace from 18,000 feet MSL up to and including FL 600, including the airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous States and Alaska. Unless otherwise authorized, all persons must operate their aircraft under IFR.

2. CLASS B– Generally, that airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of airport operations or passenger enplanements. The configuration of each

Class B airspace area is individually tailored and consists of a surface area and two or more layers (some Class B airspace areas resemble upside-down wedding cakes), and is designed to contain all published instrument procedures once an aircraft enters the airspace. An ATC clearance is required for all aircraft to operate in the area, and all aircraft that are so cleared receive separation services within the airspace. The cloud clearance requirement for VFR operations is "clear of clouds."

3. CLASS C- Generally, that airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Although the configuration of each Class C area is individually tailored, the airspace usually consists of a surface area with a 5 NM radius, a circle with a 10 NM radius that extends no lower than 1,200 feet up to 4,000 feet above the airport elevation, and an outer area that is not charted. Each person must establish two-way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while within the airspace. VFR aircraft are only separated from IFR aircraft within the airspace.

(See OUTER AREA.)

4. CLASS D– Generally, that airspace from the surface to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower. The configuration of each Class D airspace area is individually tailored and when instrument procedures are published, the airspace will normally be designed to contain the procedures. Arrival extensions for instrument approach procedures may be Class D or Class E airspace. Unless otherwise authorized, each person must establish two-way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while in the airspace. No separation services are provided to VFR aircraft.

5. CLASS E– Generally, if the airspace is not Class A, Class B, Class C, or Class D, and it is controlled airspace, it is Class E airspace. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument procedures. Also in this class are Federal airways, airspace beginning at either 700 or 1,200 feet AGL used to transition to/from the terminal or en route environment, en route domestic, and offshore airspace areas designated below 18,000 feet MSL. Unless designated at a lower altitude, Class E airspace begins at 14,500 MSL over the United States, including that airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous States and Alaska, up to, but not including 18,000 feet MSL, and the airspace above FL 600.

CONTROLLED AIRSPACE [ICAO]– An airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification.

Note: Controlled airspace is a generic term which covers ATS airspace Classes A, B, C, D, and E.

CONTROLLED TIME OF ARRIVAL– Arrival time assigned during a Traffic Management Program. This time may be modified due to adjustments or user options.

CONTROLLER-

(See AIR TRAFFIC CONTROL SPECIALIST.)

CONTROLLER [ICAO]– A person authorized to provide air traffic control services.

CONTROLLER PILOT DATA LINK COMMUNICATIONS (CPDLC)– A two-way digital communications system that conveys textual air traffic control messages between controllers and pilots using ground or satellite-based radio relay stations.

CONVECTIVE SIGMET– A weather advisory concerning convective weather significant to the safety of all aircraft. Convective SIGMETs are issued for tornadoes, lines of thunderstorms, embedded thunderstorms of any intensity level, areas of thunderstorms greater than or equal to VIP level 4 with an area coverage of $\frac{4}{10}$ (40%) or more, and hail $\frac{3}{4}$ inch or greater.

(See AIRMET.) (See CWA.) (See SAW.) (See SIGMET.) (Refer to AIM.)

CONVECTIVE SIGNIFICANT METEOROLOG-ICAL INFORMATION-

(See CONVECTIVE SIGMET.)

COOPERATIVE SURVEILLANCE- Any surveillance system, such as secondary surveillance radar (SSR), wide-area multilateration (WAM), or ADS-B, that is dependent upon the presence of certain equipment onboard the aircraft or vehicle to be detected.

(See AUTOMATIC DEPENDENT SURVEILLANCE-BROADCAST.) (See NON-COOPERATIVE SURVEILLANCE.) (See RADAR.) (See WIDE AREA MULTILATERATION.)

COORDINATES- The intersection of lines of reference, usually expressed in degrees/minutes/ seconds of latitude and longitude, used to determine position or location.

COORDINATION FIX– The fix in relation to which facilities will handoff, transfer control of an aircraft, or coordinate flight progress data. For terminal facilities, it may also serve as a clearance for arriving aircraft.

COPTER-

(See HELICOPTER.)

CORRECTION- An error has been made in the transmission and the correct version follows.

COUPLED APPROACH– An instrument approach performed by the aircraft autopilot, and/or visually depicted on the flight director, which is receiving position information and/or steering commands from onboard navigational equipment. In general, coupled non-precision approaches must be flown manually (autopilot disengaged) at altitudes lower than 50 feet AGL below the minimum descent altitude, and coupled precision approaches must be flown manually (autopilot disengaged) below 50 feet AGL unless authorized to conduct autoland operations. Coupled instrument approaches are commonly flown to the allowable IFR weather minima established by the operator or PIC, or flown VFR for training and safety.

COUPLED SCHEDULING (CS)/ EXTENDED METERING (XM)– Adds additional Constraint Satisfaction Points for metered aircraft along their route. This provides the ability to merge flows upstream from the meter fix and results in a more optimal distribution of delays over a greater distance from the airport, increased meter list accuracy, and more accurate delivery to the meter fix.

COURSE-

a. The intended direction of flight in the horizontal plane measured in degrees from north.

b. The ILS localizer signal pattern usually specified as the front course or the back course.

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(See BEARING.)
(See INSTRUMENT LANDING SYSTEM.)
(See RADIAL.)
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CPDLC-

(See CONTROLLER PILOT DATA LINK COMMUNICATIONS.)

CPL [ICAO]-

(See ICAO term CURRENT FLIGHT PLAN.)

CRITICAL ENGINE– The engine which, upon failure, would most adversely affect the performance or handling qualities of an aircraft.

CROSS (FIX) AT (ALTITUDE) – Used by ATC when a specific altitude restriction at a specified fix is required.

CROSS (FIX) AT OR ABOVE (ALTITUDE)– Used by ATC when an altitude restriction at a specified fix is required. It does not prohibit the aircraft from crossing the fix at a higher altitude than specified; however, the higher altitude may not be one that will violate a succeeding altitude restriction or altitude assignment.

(See ALTITUDE RESTRICTION.) (Refer to AIM.)

CROSS (FIX) AT OR BELOW (ALTITUDE)– Used by ATC when a maximum crossing altitude at a specific fix is required. It does not prohibit the aircraft from crossing the fix at a lower altitude; however, it must be at or above the minimum IFR altitude.

(See ALTITUDE RESTRICTION.) (See MINIMUM IFR ALTITUDES.) (Refer to 14 CFR Part 91.)

CROSSWIND-

a. When used concerning the traffic pattern, the word means "crosswind leg."

(See TRAFFIC PATTERN.)

b. When used concerning wind conditions, the word means a wind not parallel to the runway or the path of an aircraft.

(See CROSSWIND COMPONENT.)

CROSSWIND COMPONENT- The wind component measured in knots at 90 degrees to the longitudinal axis of the runway.

CRUISE– Used in an ATC clearance to authorize a pilot to conduct flight at any altitude from the minimum IFR altitude up to and including the altitude specified in the clearance. The pilot may level off at any intermediate altitude within this block of airspace. Climb/descent within the block is to be made at the discretion of the pilot. However, once the pilot starts descent and verbally reports leaving an altitude without additional ATC clearance. Further, it is approval for the pilot to proceed to and make an approach at destination airport and can be used in conjunction with:

a. An airport clearance limit at locations with a standard/special instrument approach procedure. The CFRs require that if an instrument letdown to an airport is necessary, the pilot shall make the letdown in accordance with a standard/special instrument approach procedure for that airport, or

b. An airport clearance limit at locations that are within/below/outside controlled airspace and without a standard/special instrument approach procedure. Such a clearance is NOT AUTHORIZA-TION for the pilot to descend under IFR conditions below the applicable minimum IFR altitude nor does it imply that ATC is exercising control over aircraft in Class G airspace; however, it provides a means for the aircraft to proceed to destination airport, descend, and land in accordance with applicable CFRs governing VFR flight operations. Also, this provides search and rescue protection until such time as the IFR flight plan is closed.

(See INSTRUMENT APPROACH PROCEDURE.)

CRUISE CLIMB– A climb technique employed by aircraft, usually at a constant power setting, resulting in an increase of altitude as the aircraft weight decreases.

CRUISING ALTITUDE– An altitude or flight level maintained during en route level flight. This is a

constant altitude and should not be confused with a cruise clearance.

(See ALTITUDE.) (See ICAO term CRUISING LEVEL.)

CRUISING LEVEL-(See CRUISING ALTITUDE.)

CRUISING LEVEL [ICAO]– A level maintained during a significant portion of a flight.

CSP-

(See CONSTRAINT SATISFACTION POINT)

CT MESSAGE– An EDCT time generated by the ATCSCC to regulate traffic at arrival airports. Normally, a CT message is automatically transferred from the traffic management system computer to the NAS en route computer and appears as an EDCT. In the event of a communication failure between the traffic management system computer and the NAS, the CT message can be manually entered by the TMC at the en route facility.

CTA-

(See CONTROLLED TIME OF ARRIVAL.) (See ICAO term CONTROL AREA.) CTAF-

(See COMMON TRAFFIC ADVISORY FREQUENCY.)

CTOP-

(See COLLABORATIVE TRAJECTORY OPTIONS PROGRAM)

CTRD-

(See CERTIFIED TOWER RADAR DISPLAY.)

CURRENT FLIGHT PLAN [ICAO]– The flight plan, including changes, if any, brought about by subsequent clearances.

CURRENT PLAN– The ATC clearance the aircraft has received and is expected to fly.

CVFP APPROACH-

(See CHARTED VISUAL FLIGHT PROCEDURE APPROACH.)

CWA-

(See CENTER WEATHER ADVISORY and WEATHER ADVISORY.)

CWT-

(See CONSOLIDATED WAKE TURBULENCE.)

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NAS-

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(See NATIONAL AIRSPACE SYSTEM.)
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NAT HLA-

(See NORTH ATLANTIC HIGH LEVEL AIRSPACE.)

NATIONAL AIRSPACE SYSTEM– The common network of U.S. airspace; air navigation facilities, equipment and services, airports or landing areas; aeronautical charts, information and services; rules, regulations and procedures, technical information, and manpower and material. Included are system components shared jointly with the military.

NATIONAL BEACON CODE ALLOCATION PLAN AIRSPACE (NBCAP)– Airspace over United States territory located within the North American continent between Canada and Mexico, including adjacent territorial waters outward to about boundaries of oceanic control areas (CTA)/Flight Information Regions (FIR).

(See FLIGHT INFORMATION REGION.)

NATIONAL FLIGHT DATA DIGEST (NFDD)– A daily (except weekends and Federal holidays) publication of flight information appropriate to aeronautical charts, aeronautical publications, Notices to Air Missions, or other media serving the purpose of providing operational flight data essential to safe and efficient aircraft operations.

NATIONAL SEARCH AND RESCUE PLAN– An interagency agreement which provides for the effective utilization of all available facilities in all types of search and rescue missions.

NATIONAL SECURITY AREA (NSA)-(See SPECIAL USE AIRSPACE.)

NAVAID-

(See NAVIGATIONAL AID.)

NAVAID CLASSES– VOR, VORTAC, and TACAN aids are classed according to their operational use. The three classes of NAVAIDs are:

- **a.** T– Terminal.
- **b.** L– Low altitude.
- **c.** H– High altitude.

Note: The normal service range for T, L, and H class aids is found in the AIM. Certain operational

requirements make it necessary to use some of these aids at greater service ranges than specified. Extended range is made possible through flight inspection determinations. Some aids also have lesser service range due to location, terrain, frequency protection, etc. Restrictions to service range are listed in Chart Supplement U.S.

NAVIGABLE AIRSPACE– Airspace at and above the minimum flight altitudes prescribed in the CFRs including airspace needed for safe takeoff and landing.

(Refer to 14 CFR Part 91.)

NAVIGATION REFERENCE SYSTEM (NRS)– The NRS is a system of waypoints developed for use within the United States for flight planning and navigation without reference to ground based navigational aids. The NRS waypoints are located in a grid pattern along defined latitude and longitude lines. The initial use of the NRS will be in the high altitude environment. The NRS waypoints are intended for use by aircraft capable of point–to–point navigation.

NAVIGATION SPECIFICATION [ICAO] – A set of aircraft and flight crew requirements needed to support performance–based navigation operations within a defined airspace. There are two kinds of navigation specifications:

a. RNP specification. A navigation specification based on area navigation that includes the requirement for performance monitoring and alerting, designated by the prefix RNP; e.g., RNP 4, RNP APCH.

b. RNAV specification. A navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV; e.g., RNAV 5, RNAV 1.

Note: The Performance–based Navigation Manual (Doc 9613), Volume II contains detailed guidance on navigation specifications.

NAVIGATIONAL AID– Any visual or electronic device airborne or on the surface which provides point-to-point guidance information or position data to aircraft in flight.

(See AIR NAVIGATION FACILITY.)

NAVSPEC-

(See NAVIGATION SPECIFICATION [ICAO].)

NBCAP AIRSPACE-

(See NATIONAL BEACON CODE ALLOCATION PLAN AIRSPACE.)

NDB-

(See NONDIRECTIONAL BEACON.)

NEGATIVE- "No," or "permission not granted," or "that is not correct."

NEGATIVE CONTACT– Used by pilots to inform ATC that:

a. Previously issued traffic is not in sight. It may be followed by the pilot's request for the controller to provide assistance in avoiding the traffic.

b. They were unable to contact ATC on a particular frequency.

NFDD-

(See NATIONAL FLIGHT DATA DIGEST.)

NIGHT– The time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the Air Almanac, converted to local time.

(See ICAO term NIGHT.)

NIGHT [ICAO]– The hours between the end of evening civil twilight and the beginning of morning civil twilight or such other period between sunset and sunrise as may be specified by the appropriate authority.

Note: Civil twilight ends in the evening when the center of the sun's disk is 6 degrees below the horizon and begins in the morning when the center of the sun's disk is 6 degrees below the horizon.

NO GYRO APPROACH– A radar approach/vector provided in case of a malfunctioning gyro-compass or directional gyro. Instead of providing the pilot with headings to be flown, the controller observes the radar track and issues control instructions "turn right/left" or "stop turn" as appropriate.

(Refer to AIM.)

NO GYRO VECTOR-

(See NO GYRO APPROACH.)

NO TRANSGRESSION ZONE (NTZ)– The NTZ is a 2,000 foot wide zone, located equidistant between parallel runway or SOIA final approach courses, in which flight is normally not allowed. NONAPPROACH CONTROL TOWER- Authorizes aircraft to land or takeoff at the airport controlled by the tower or to transit the Class D airspace. The primary function of a nonapproach control tower is the sequencing of aircraft in the traffic pattern and on the landing area. Nonapproach control towers also separate aircraft operating under instrument flight rules clearances from approach controls and centers. They provide ground control services to aircraft, vehicles, personnel, and equipment on the airport movement area.

NONCOMMON ROUTE/PORTION– That segment of a North American Route between the inland navigation facility and a designated North American terminal.

NON-COOPERATIVE SURVEILLANCE- Any surveillance system, such as primary radar, that is not dependent upon the presence of any equipment on the aircraft or vehicle to be tracked.

(See COOPERATIVE SURVEILLANCE.) (See RADAR.)

NONDIRECTIONAL BEACON– An L/MF or UHF radio beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his/her bearing to or from the radio beacon and "home" on or track to or from the station. When the radio beacon is installed in conjunction with the Instrument Landing System marker, it is normally called a Compass Locator.

(See AUTOMATIC DIRECTION FINDER.) (See COMPASS LOCATOR.)

NONMOVEMENT AREAS- Taxiways and apron (ramp) areas not under the control of air traffic.

NONPRECISION APPROACH– (See NONPRECISION APPROACH PROCEDURE.)

NONPRECISION APPROACH PROCEDURE- A standard instrument approach procedure in which no electronic glideslope is provided; e.g., VOR, TACAN, NDB, LOC, ASR, LDA, or SDF approaches.

NONRADAR- Precedes other terms and generally means without the use of radar, such as:

a. Nonradar Approach. Used to describe instrument approaches for which course guidance on final approach is not provided by ground-based precision or surveillance radar. Radar vectors to the

final approach course may or may not be provided by ATC. Examples of nonradar approaches are VOR, NDB, TACAN, ILS, RNAV, and GLS approaches.

(See FINAL APPROACH COURSE.) (See FINAL APPROACH-IFR.) (See INSTRUMENT APPROACH PROCEDURE.) (See RADAR APPROACH.)

b. Nonradar Approach Control. An ATC facility providing approach control service without the use of radar.

(See APPROACH CONTROL FACILITY.) (See APPROACH CONTROL SERVICE.)

c. Nonradar Arrival. An aircraft arriving at an airport without radar service or at an airport served by a radar facility and radar contact has not been established or has been terminated due to a lack of radar service to the airport.

(See RADAR ARRIVAL.) (See RADAR SERVICE.)

d. Nonradar Route. A flight path or route over which the pilot is performing his/her own navigation. The pilot may be receiving radar separation, radar monitoring, or other ATC services while on a nonradar route.

(See RADAR ROUTE.)

e. Nonradar Separation. The spacing of aircraft in accordance with established minima without the use of radar; e.g., vertical, lateral, or longitudinal separation.

(See RADAR SEPARATION.)

NON-RESTRICTIVE ROUTING (NRR)- Portions of a proposed route of flight where a user can flight plan the most advantageous flight path with no requirement to make reference to ground-based NAVAIDs.

NOPAC-

(See NORTH PACIFIC.)

NORDO (No Radio)– Aircraft that cannot or do not communicate by radio when radio communication is required are referred to as "NORDO."

(See LOST COMMUNICATIONS.)

NORMAL OPERATING ZONE (NOZ)– The NOZ is the operating zone within which aircraft flight remains during normal independent simultaneous parallel ILS approaches.

NORTH AMERICAN ROUTE- A numerically coded route preplanned over existing airway and route systems to and from specific coastal fixes serving the North Atlantic. North American Routes consist of the following:

a. Common Route/Portion. That segment of a North American Route between the inland navigation facility and the coastal fix.

b. Noncommon Route/Portion. That segment of a North American Route between the inland navigation facility and a designated North American terminal.

c. Inland Navigation Facility. A navigation aid on a North American Route at which the common route and/or the noncommon route begins or ends.

d. Coastal Fix. A navigation aid or intersection where an aircraft transitions between the domestic route structure and the oceanic route structure.

NORTH AMERICAN ROUTE PROGRAM (NRP)– The NRP is a set of rules and procedures which are designed to increase the flexibility of user flight planning within published guidelines.

NORTH ATLANTIC HIGH LEVEL AIRSPACE (NAT HLA)– That volume of airspace (as defined in ICAO Document 7030) between FL 285 and FL 420 within the Oceanic Control Areas of Bodo Oceanic, Gander Oceanic, New York Oceanic East, Reykjavik, Santa Maria, and Shanwick, excluding the Shannon and Brest Ocean Transition Areas. ICAO Doc 007 *North Atlantic Operations and Airspace Manual* provides detailed information on related aircraft and operational requirements.

NORTH PACIFIC- An organized route system between the Alaskan west coast and Japan.

NOT STANDARD– Varying from what is expected or published. For use in NOTAMs only.

NOT STD-

(See NOT STANDARD.)

NOTAM-

(See NOTICE TO AIR MISSIONS.)

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 AIR MISSIONS (NOTAM)– A notice containing information (not known sufficiently in advance to publicize by other means) concerning the establishment, condition, or change in any component (facility, service, or procedure of, or hazard in the National Airspace System) the timely knowledge of which is essential to personnel concerned with flight operations.

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.)

NRR-

(See NON-RESTRICTIVE ROUTING.)

NRS-

(See NAVIGATION REFERENCE SYSTEM.)

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.)

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 FAA Order JO 7110.65, paragraph 4–5–1, VER-TICAL 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.)

REFINED HAZARD AREA (RHA)– Used by ATC. Airspace that is defined and distributed after a failure of a launch or reentry operation to provide a more concise depiction of the hazard location than a Contingency Hazard Area.

(See AIRCRAFT HAZARD AREA.) (See CONTINGENCY HAZARD AREA.) (See TRANSITIONAL HAZARD AREA.) REDUCED VERTICAL SEPARATION MINI-MUM (RVSM) AIRSPACE– RVSM airspace is defined as any airspace between FL 290 and FL 410 inclusive, where eligible aircraft are separated vertically by 1,000 feet. Authorization guidance for operations in this airspace is provided in Advisory Circular AC 91–85.

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 (RCO)- An unmanned communications facility remotely controlled by air traffic personnel. RCOs serve FSSs. Remote Transmitter/Receivers (RTR) 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 PILOT IN COMMAND (RPIC)– The RPIC is directly responsible for and is the final authority as to the operation of the unmanned aircraft system.

REMOTE TRANSMITTER/RECEIVER (RTR)-(See REMOTE COMMUNICATIONS OUTLET.)

REPORT– Used to instruct pilots to advise ATC of specified information; e.g., "Report passing Hamilton VOR."

REPORTING POINT- A geographical location in relation to which the position of an aircraft is reported.

(See COMPULSORY REPORTING POINTS.) (See ICAO term REPORTING POINT.) (Refer to AIM.)

REPORTING POINT [ICAO]– A specified geographical location in relation to which the position of an aircraft can be reported.

REQUEST FULL ROUTE CLEARANCE– Used by pilots to request that the entire route of flight be read verbatim in an ATC clearance. Such request should be made to preclude receiving an ATC clearance based on the original filed flight plan when a filed IFR flight plan has been revised by the pilot, company, or operations prior to departure.

REQUIRED NAVIGATION PERFORMANCE (RNP)– A statement of the navigational performance necessary for operation within a defined airspace. The following terms are commonly associated with RNP:

a. Required Navigation Performance Level or Type (RNP-X). A value, in nautical miles (NM), from the intended horizontal position within which an aircraft would be at least 95-percent of the total flying time.

b. Advanced – Required Navigation Performance (A–RNP). A navigation specification based on RNP that requires advanced functions such as scalable RNP, radius–to–fix (RF) legs, and tactical parallel offsets. This sophisticated Navigation Specification (NavSpec) is designated by the abbreviation "A–RNP".

c. Required Navigation Performance (RNP) Airspace. A generic term designating airspace, route(s), leg(s), operation(s), or procedure(s) where minimum required navigational performance (RNP) have been established.

d. Actual Navigation Performance (ANP). A measure of the current estimated navigational performance. Also referred to as Estimated Position Error (EPE).

e. Estimated Position Error (EPE). A measure of the current estimated navigational performance. Also referred to as Actual Navigation Performance (ANP).

f. Lateral Navigation (LNAV). A function of area navigation (RNAV) equipment which calculates, displays, and provides lateral guidance to a profile or path.

g. Vertical Navigation (VNAV). A function of area navigation (RNAV) equipment which calculates, displays, and provides vertical guidance to a profile or path.

REROUTE IMPACT ASSESSMENT (RRIA)– A capability within the Traffic Flow Management System that is used to define and evaluate a potential reroute prior to implementation, with or without miles–in–trail (MIT) restrictions. RRIA functions estimate the impact on demand (e.g., sector loads) and performance (e.g., flight delay). Using RRIA, traffic management personnel can determine whether the reroute will sufficiently reduce demand in the Flow Constraint Area and not create excessive "spill over" demand in the adjacent airspace on a specific route segment or point of interest (POI).

RESCUE COORDINATION CENTER (RCC)– A search and rescue (SAR) facility equipped and manned to coordinate and control SAR operations in an area designated by the SAR plan. The U.S. Coast Guard and the U.S. Air Force have responsibility for the operation of RCCs.

(See ICAO term RESCUE CO-ORDINATION CENTRE.)

RESCUE CO-ORDINATION CENTRE [ICAO]– A unit responsible for promoting efficient organization of search and rescue service and for coordinating the conduct of search and rescue operations within a search and rescue region.

RESOLUTION ADVISORY– A display indication given to the pilot by the Traffic alert and Collision Avoidance System (TCAS II) recommending a maneuver to increase vertical separation relative to an intruding aircraft. Positive, negative, and vertical speed limit (VSL) advisories constitute the resolution advisories. A resolution advisory is also classified as corrective or preventive.

RESTRICTED AREA-(See SPECIAL USE AIRSPACE.) (See ICAO term RESTRICTED AREA.)

RESTRICTED AREA [ICAO]– An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions.

RESUME NORMAL SPEED– Used by ATC to advise a pilot to resume an aircraft's normal operating speed. It is issued to terminate a speed adjustment where no published speed restrictions apply. It does not delete speed restrictions in published procedures of upcoming segments of flight. This does not relieve the pilot of those speed restrictions that are applicable to 14 CFR Section 91.117.

RESUME OWN NAVIGATION– Used by ATC to advise a pilot to resume his/her own navigational responsibility. It is issued after completion of a radar vector or when radar contact is lost while the aircraft is being radar vectored.

(See RADAR CONTACT LOST.) (See RADAR SERVICE TERMINATED.)

RESUME PUBLISHED SPEED– Used by ATC to advise a pilot to resume published speed restrictions that are applicable to a SID, STAR, or other instrument procedure. It is issued to terminate a speed adjustment where speed restrictions are published on a charted procedure.

RHA-

(See REFINED HAZARD AREA.)

RMI-

(See RADIO MAGNETIC INDICATOR.)

RNAV-

(See AREA NAVIGATION (RNAV).)

RNAV APPROACH– An instrument approach procedure which relies on aircraft area navigation equipment for navigational guidance.

(See AREA NAVIGATION (RNAV).) (See INSTRUMENT APPROACH PROCEDURE.)

ROAD RECONNAISSANCE (RC)- Military activity requiring navigation along roads, railroads, and rivers. Reconnaissance route/route segments are seldom along a straight line and normally require a lateral route width of 10 NM to 30 NM and an altitude range of 500 feet to 10,000 feet AGL.

ROGER – I have received all of your last transmission. It should not be used to answer a question requiring a yes or a no answer.

(See AFFIRMATIVE.) (See NEGATIVE.)

ROLLOUT RVR-(See VISIBILITY.)

ROTOR WASH– A phenomenon resulting from the vertical down wash of air generated by the main rotor(s) of a helicopter.

ROUND–ROBIN FLIGHT PLAN– A single flight plan filed from the departure airport to an intermediary destination(s) and then returning to the original departure airport.

ROUTE- A defined path, consisting of one or more courses in a horizontal plane, which aircraft traverse over the surface of the earth.

(See AIRWAY.) (See JET ROUTE.) (See PUBLISHED ROUTE.) (See UNPUBLISHED ROUTE.)

ROUTE ACTION NOTIFICATION- EDST notification that a PAR/PDR/PDAR has been applied to the flight plan.

(See ATC PREFERRED ROUTE NOTIFICATION.) (See EN ROUTE DECISION SUPPORT TOOL.)

ROUTE AMENDMENT DIALOG (RAD)– A capability within the Traffic Flow Management System that allows traffic management personnel to submit or edit a route amendment for one or more flights.

ROUTE SEGMENT– As used in Air Traffic Control, a part of a route that can be defined by two navigational fixes, two NAVAIDs, or a fix and a NAVAID.

(See FIX.) (See ROUTE.) (See ICAO term ROUTE SEGMENT.)

ROUTE SEGMENT [ICAO]– A portion of a route to be flown, as defined by two consecutive significant points specified in a flight plan.

RPIC-

(See REMOTE PILOT IN COMMAND.)

RRIA-

(See REROUTE IMPACT ASSESSMENT.)

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RSA-
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(See RUNWAY SAFETY AREA.)

RTR-

(See REMOTE TRANSMITTER/RECEIVER.)

RUNWAY- A defined rectangular area on a land airport prepared for the landing and takeoff run of aircraft along its length. Runways are normally numbered in relation to their magnetic direction rounded off to the nearest 10 degrees; e.g., Runway 1, Runway 25.

(See PARALLEL RUNWAYS.) (See ICAO term RUNWAY.)

RUNWAY [ICAO]– A defined rectangular area on a land aerodrome prepared for the landing and takeoff of aircraft.

RUNWAY CENTERLINE LIGHTING-(See AIRPORT LIGHTING.)

RUNWAY CONDITION CODES (RwyCC)– Numerical readings, provided by airport operators, that indicate runway surface contamination (for example, slush, ice, rain, etc.). These values range from "1" (poor) to "6" (dry) and must be included on the ATIS when the reportable condition is less than 6 in any one or more of the three runway zones (touchdown, midpoint, rollout).

RUNWAY CONDITION READING– Numerical decelerometer readings relayed by air traffic controllers at USAF and certain civil bases for use by the pilot in determining runway braking action. These readings are routinely relayed only to USAF and Air National Guard Aircraft.

(See BRAKING ACTION.)

RUNWAY CONDITION REPORT (RwyCR)– A data collection worksheet used by airport operators that correlates the runway percentage of coverage along with the depth and type of contaminant for the purpose of creating a FICON NOTAM.

(See RUNWAY CONDITION CODES.)

RUNWAY END IDENTIFIER LIGHTS (REIL)-(See AIRPORT LIGHTING.) RUNWAY ENTRANCE LIGHTS (REL)–An array of red lights which include the first light at the hold line followed by a series of evenly spaced lights to the runway edge aligned with the taxiway centerline, and one additional light at the runway centerline in line with the last two lights before the runway edge.

RUNWAY GRADIENT– The average slope, measured in percent, between two ends or points on a runway. Runway gradient is depicted on Government aerodrome sketches when total runway gradient exceeds 0.3%.

RUNWAY HEADING– The magnetic direction that corresponds with the runway centerline extended, not the painted runway number. When cleared to "fly or maintain runway heading," pilots are expected to fly or maintain the heading that corresponds with the extended centerline of the departure runway. Drift correction shall not be applied; e.g., Runway 4, actual magnetic heading of the runway centerline 044, fly 044.

RUNWAY IN USE/ACTIVE RUNWAY/DUTY RUNWAY– Any runway or runways currently being used for takeoff or landing. When multiple runways are used, they are all considered active runways. In the metering sense, a selectable adapted item which specifies the landing runway configuration or direction of traffic flow. The adapted optimum flight plan from each transition fix to the vertex is determined by the runway configuration for arrival metering processing purposes.

RUNWAY LIGHTS-(See AIRPORT LIGHTING.)

RUNWAY MARKINGS-(See AIRPORT MARKING AIDS.)

RUNWAY OVERRUN– In military aviation exclusively, a stabilized or paved area beyond the end of a runway, of the same width as the runway plus shoulders, centered on the extended runway centerline.

RUNWAY PROFILE DESCENT- An instrument flight rules (IFR) air traffic control arrival procedure to a runway published for pilot use in graphic and/or textual form and may be associated with a STAR. Runway Profile Descents provide routing and may depict crossing altitudes, speed restrictions, and headings to be flown from the en route structure to the point where the pilot will receive clearance for and execute an instrument approach procedure. A Runway Profile Descent may apply to more than one runway if so stated on the chart.

(Refer to AIM.)

RUNWAY SAFETY AREA- A defined surface surrounding the runway prepared, or suitable, for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway. The dimensions of the RSA vary and can be determined by using the criteria contained within AC 150/5300-13, Airport Design, Chapter 3. Figure 3–1 in AC 150/5300-13 depicts the RSA. The design standards dictate that the RSA shall be:

a. Cleared, graded, and have no potentially hazardous ruts, humps, depressions, or other surface variations;

b. Drained by grading or storm sewers to prevent water accumulation;

c. Capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft; and,

d. Free of objects, except for objects that need to be located in the runway safety area because of their function. These objects shall be constructed on low impact resistant supports (frangible mounted structures) to the lowest practical height with the frangible point no higher than 3 inches above grade.

(Refer to AC 150/5300-13, Airport Design, Chapter 3.)

RUNWAY STATUS LIGHTS (RWSL) SYSTEM– The RWSL is a system of runway and taxiway lighting to provide pilots increased situational awareness by illuminating runway entry lights (REL) when the runway is unsafe for entry or crossing, and take-off hold lights (THL) when the runway is unsafe for departure. RUNWAY TRANSITION– (See SEGMENTS OF A SID/STAR)

RUNWAY TRANSITION WAYPOINT-(See SEGMENTS OF A SID/STAR.)

RUNWAY USE PROGRAM– A noise abatement runway selection plan designed to enhance noise abatement efforts with regard to airport communities for arriving and departing aircraft. These plans are developed into runway use programs and apply to all turbojet aircraft 12,500 pounds or heavier; turbojet aircraft less than 12,500 pounds are included only if the airport proprietor determines that the aircraft creates a noise problem. Runway use programs are coordinated with FAA offices, and safety criteria used in these programs are developed by the Office of Flight Operations. Runway use programs are administered by the Air Traffic Service as "Formal" or "Informal" programs.

a. Formal Runway Use Program– An approved noise abatement program which is defined and acknowledged in a Letter of Understanding between Flight Operations, Air Traffic Service, the airport proprietor, and the users. Once established, participation in the program is mandatory for aircraft operators and pilots as provided for in 14 CFR Section 91.129.

b. Informal Runway Use Program– An approved noise abatement program which does not require a Letter of Understanding, and participation in the program is voluntary for aircraft operators/pilots.

RUNWAY VISUAL RANGE (RVR)-(See VISIBILITY.)

RwyCC-

(See RUNWAY CONDITION CODES.)

RwyCR-

(See RUNWAY CONDITION REPORT.)

SIMULTANEOUS (CONVERGING) INDEPEND-

ENT APPROACHES- An approach operation permitting ILS/RNAV/GLS approaches to non-parallel runways where approach procedure design maintains the required aircraft spacing throughout the approach and missed approach and hence the operations may be conducted independently.

SIMULTANEOUS ILS APPROACHES- An approach system permitting simultaneous ILS approaches to airports having parallel runways separated by at least 4,300 feet between centerlines. Integral parts of a total system are ILS, radar, communications, ATC procedures, and appropriate airborne equipment.

(See PARALLEL RUNWAYS.) (Refer to AIM.)

SIMULTANEOUS OFFSET INSTRUMENT APPROACH (SOIA)– An instrument landing system comprised of an ILS PRM, RNAV PRM or GLS PRM approach to one runway and an offset LDA PRM with glideslope or an RNAV PRM or GLS PRM approach utilizing vertical guidance to another where parallel runway spaced less than 3,000 feet and at least 750 feet apart. The approach courses converge by 2.5 to 3 degrees. Simultaneous close parallel PRM approach procedures apply up to the point where the approach course separation becomes 3,000 feet, at the offset MAP. From the offset MAP to the runway threshold, visual separation by the aircraft conducting the offset approach is utilized.

(Refer to AIM)

SIMULTANEOUS (PARALLEL) DEPENDENT APPROACHES- An approach operation permitting ILS/RNAV/GLS approaches to adjacent parallel runways where prescribed diagonal spacing must be maintained. Aircraft are not permitted to pass each other during simultaneous dependent operations. Integral parts of a total system ATC procedures, and appropriate airborne and ground based equipment.

SINGLE DIRECTION ROUTES– Preferred IFR Routes which are sometimes depicted on high altitude en route charts and which are normally flown in one direction only.

(See PREFERRED IFR ROUTES.) (Refer to CHART SUPPLEMENT U.S.)

SINGLE FREQUENCY APPROACH- A service provided under a letter of agreement to military single-piloted turbojet aircraft which permits use of

a single UHF frequency during approach for landing. Pilots will not normally be required to change frequency from the beginning of the approach to touchdown except that pilots conducting an en route descent are required to change frequency when control is transferred from the air route traffic control center to the terminal facility. The abbreviation "SFA" in the DOD FLIP IFR Supplement under "Communications" indicates this service is available at an aerodrome.

SINGLE-PILOTED AIRCRAFT– A military turbojet aircraft possessing one set of flight controls, tandem cockpits, or two sets of flight controls but operated by one pilot is considered single-piloted by ATC when determining the appropriate air traffic service to be applied.

(See SINGLE FREQUENCY APPROACH.)

SKYSPOTTER- A pilot who has received specialized training in observing and reporting inflight weather phenomena.

SLASH- A radar beacon reply displayed as an elongated target.

SLDI-

(See SECTOR LIST DROP INTERVAL.)

SLOW TAXI– To taxi a float plane at low power or low RPM.

SMALL UNMANNED AIRCRAFT SYSTEM (sUAS)–An unmanned aircraft weighing less than 55 pounds on takeoff, including everything that is on board or otherwise attached to the aircraft.

SN-

(See SYSTEM STRATEGIC NAVIGATION.)

SPACE–BASED ADS–B (SBA)– A constellation of satellites that receives ADS–B Out broadcasts and relays that information to the appropriate surveillance facility. The currently deployed SBA system is only capable of receiving broadcasts from 1090ES–equipped aircraft, and not from those equipped with only a universal access transceiver (UAT). Also, aircraft with a top–of–fuselage–mounted transponder antenna (required for TCAS II installations) will be better received by SBA, especially at latitudes below 45 degrees.

(See AUTOMATIC DEPENDENT SURVEILLANCE-BROADCAST.) (See AUTOMATIC DEPENDENT SURVEILLANCE-BROADCAST OUT.)

SPACE LAUNCH AND REENTRY AREA-Locations where commercial space launch and/or reentry operations occur. For pilot awareness, a rocket–shaped symbol is used to depict space launch and reentry areas on sectional aeronautical charts.

SPEAK SLOWER– Used in verbal communications as a request to reduce speech rate.

SPECIAL ACTIVITY AIRSPACE (SAA)– Any airspace with defined dimensions within the National Airspace System wherein limitations may be imposed upon aircraft operations. This airspace may be restricted areas, prohibited areas, military operations areas, air ATC assigned airspace, and any other designated airspace areas. The dimensions of this airspace are programmed into EDST and can be designated as either active or inactive by screen entry. Aircraft trajectories are constantly tested against the dimensions of active areas and alerts issued to the applicable sectors when violations are predicted.

(See EN ROUTE DECISION SUPPORT TOOL.)

SPECIAL AIR TRAFFIC RULES (SATR)– Rules that govern procedures for conducting flights in certain areas listed in 14 CFR Part 93. The term "SATR" is used in the United States to describe the rules for operations in specific areas designated in the Code of Federal Regulations.

(Refer to 14 CFR Part 93.)

SPECIAL EMERGENCY- A condition of air piracy or other hostile act by a person(s) aboard an aircraft which threatens the safety of the aircraft or its passengers.

SPECIAL FLIGHT RULES AREA (SFRA)– An area in the NAS, described in 14 CFR Part 93, wherein the flight of aircraft is subject to special traffic rules, unless otherwise authorized by air traffic control. Not all areas listed in 14 CFR Part 93 are designated SFRA, but special air traffic rules apply to all areas described in 14 CFR Part 93.

SPECIAL INSTRUMENT APPROACH PROCE-DURE-

(See INSTRUMENT APPROACH PROCEDURE.)

SPECIAL USE AIRSPACE– Airspace of defined dimensions identified by an area on the surface of the earth wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. Types of special use airspace are:

a. Alert Area– Airspace which may contain a high volume of pilot training activities or an unusual type

of aerial activity, neither of which is hazardous to aircraft. Alert Areas are depicted on aeronautical charts for the information of nonparticipating pilots. All activities within an Alert Area are conducted in accordance with Federal Aviation Regulations, and pilots of participating aircraft as well as pilots transiting the area are equally responsible for collision avoidance.

b. Controlled Firing Area– Airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons and property on the ground.

c. Military Operations Area (MOA)– Permanent and temporary MOAs are airspace established outside of Class A airspace area to separate or segregate certain nonhazardous military activities from IFR traffic and to identify for VFR traffic where these activities are conducted. Permanent MOAs are depicted on Sectional Aeronautical, VFR Terminal Area, and applicable En Route Low Altitude Charts.

Note: Temporary MOAs are not charted.

(Refer to AIM.)

d. National Security Area (NSA)– Airspace of defined vertical and lateral dimensions established at locations where there is a requirement for increased security of ground facilities. Pilots are requested to voluntarily avoid flying through the depicted NSA. When a greater level of security is required, flight through an NSA may be temporarily prohibited by establishing a TFR under the provisions of 14 CFR Section 99.7. Such prohibitions will be issued by FAA Headquarters and disseminated via the U.S. NOTAM System.

(Refer to AIM)

e. Prohibited Area– Airspace designated under 14 CFR Part 73 within which no person may operate an aircraft without the permission of the using agency.

(Refer to AIM.)

(Refer to En Route Charts.)

f. Restricted Area– Permanent and temporary restricted areas are airspace designated under 14 CFR Part 73, within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint use and IFR/VFR operations in the area may be authorized by the controlling ATC facility when it is not being utilized by the using agency. Permanent restricted areas are depicted on Sectional Aeronautical, VFR Terminal
Area, and applicable En Route charts. Where joint use is authorized, the name of the ATC controlling facility is also shown.

Note: Temporary restricted areas are not charted.

(Refer to 14 CFR Part 73.) (Refer to AIM.)

g. Warning Area– A warning area is airspace of defined dimensions extending from 3 nautical miles outward from the coast of the United States, that contains activity that may be hazardous to nonparticipating aircraft. The purpose of such warning area is to warn nonparticipating pilots of the potential danger. A warning area may be located over domestic or international waters or both.

SPECIAL VFR CONDITIONS– Meteorological conditions that are less than those required for basic VFR flight in Class B, C, D, or E surface areas and in which some aircraft are permitted flight under visual flight rules.

(See SPECIAL VFR OPERATIONS.) (Refer to 14 CFR Part 91.)

SPECIAL VFR FLIGHT [ICAO]– A VFR flight cleared by air traffic control to operate within Class B, C, D, and E surface areas in meteorological conditions below VMC.

SPECIAL VFR OPERATIONS– Aircraft operating in accordance with clearances within Class B, C, D, and E surface areas in weather conditions less than the basic VFR weather minima. Such operations must be requested by the pilot and approved by ATC.

(See SPECIAL VFR CONDITIONS.) (See ICAO term SPECIAL VFR FLIGHT.)

SPEED-

(See AIRSPEED.) (See GROUND SPEED.)

SPEED ADJUSTMENT– An ATC procedure used to request pilots to adjust aircraft speed to a specific value for the purpose of providing desired spacing. Pilots are expected to maintain a speed of plus or minus 10 knots or 0.02 Mach number of the specified speed. Examples of speed adjustments are:

a. "Increase/reduce speed to Mach point (number)."

b. "Increase/reduce speed to (speed in knots)" or "Increase/reduce speed (number of knots) knots."

SPEED BRAKES– Moveable aerodynamic devices on aircraft that reduce airspeed during descent and landing.

SPEED SEGMENTS– Portions of the arrival route between the transition point and the vertex along the optimum flight path for which speeds and altitudes are specified. There is one set of arrival speed segments adapted from each transition point to each vertex. Each set may contain up to six segments.

SPOOFING– Denotes emissions of GNSS–like signals that may be acquired and tracked in combination with or instead of the intended signals by civil receivers. The onset of spoofing effects can be instantaneous or delayed, and effects can persist after the spoofing has ended. Spoofing can result in false and potentially confusing, or hazardously misleading, position, navigation, and/or date/time information in addition to loss of GNSS use.

SPEED ADVISORY– Speed advisories that are generated within Time–Based Flow Management to assist controllers to meet the Scheduled Time of Arrival (STA) at the meter fix/meter arc. See also Ground–Based Interval Management–Spacing (GIM–S) Speed Advisory.

SQUAWK (Mode, Code, Function)– Used by ATC to instruct a pilot to activate the aircraft transponder and ADS–B Out with altitude reporting enabled, or (military) to activate only specific modes, codes, or functions. Examples: "Squawk five seven zero seven;" "Squawk three/alpha, two one zero five."

(See TRANSPONDER.)

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STA-
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(See SCHEDULED TIME OF ARRIVAL.)

STAGING/QUEUING– The placement, integration, and segregation of departure aircraft in designated movement areas of an airport by departure fix, EDCT, and/or restriction.

STAND BY– Means the controller or pilot must pause for a few seconds, usually to attend to other duties of a higher priority. Also means to wait as in "stand by for clearance." The caller should reestablish contact if a delay is lengthy. "Stand by" is not an approval or denial.

STANDARD INSTRUMENT APPROACH PRO-CEDURE (SIAP)–

(See INSTRUMENT APPROACH PROCEDURE.)

STANDARD INSTRUMENT DEPARTURE (SID)– A preplanned instrument flight rule (IFR) air traffic control (ATC) departure procedure printed for pilot/controller use in graphic form to provide obstacle clearance and a transition from the terminal area to the appropriate en route structure. SIDs are primarily designed for system enhancement to expedite traffic flow and to reduce pilot/controller workload. ATC clearance must always be received prior to flying a SID.

(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.) (See OBSTACLE DEPARTURE PROCEDURE.) (Refer to AIM.)

STANDARD RATE TURN– A turn of three degrees per second.

STANDARD TERMINAL ARRIVAL (STAR)– A preplanned instrument flight rule (IFR) air traffic control arrival procedure published for pilot use in graphic and/or textual form. STARs provide transition from the en route structure to an outer fix or an instrument approach fix/arrival waypoint in the terminal area.

STANDARD TERMINAL ARRIVAL CHARTS-(See AERONAUTICAL CHART.)

STANDARD TERMINAL AUTOMATION RE-PLACEMENT SYSTEM (STARS)-(See DTAS.)

STAR-

(See STANDARD TERMINAL ARRIVAL.)

STATE AIRCRAFT– Aircraft used in military, customs and police service, in the exclusive service of any government or of any political subdivision thereof, including the government of any state, territory, or possession of the United States or the District of Columbia, but not including any government-owned aircraft engaged in carrying persons or property for commercial purposes.

STATIC RESTRICTIONS- Those restrictions that are usually not subject to change, fixed, in place, and/or published.

STATIONARY AIRSPACE RESERVATION– The term used in oceanic ATC for airspace that encompasses activities in a fixed volume of airspace to be occupied for a specified time period. Stationary Airspace Reservations may include activities such as special tests of weapons systems or equipment; certain U.S. Navy carrier, fleet, and anti–submarine operations; rocket, missile, and drone operations; and certain aerial refueling or similar operations.

(See STATIONARY ALTITUDE RESERVATION.)

STATIONARY ALTITUDE RESERVATION (STATIONARY ALTRV)– An altitude reservation which encompasses activities in a fixed volume of airspace to be occupied for a specified time period. Stationary ALTRVs may include activities such as special tests of weapons systems or equipment; certain U.S. Navy carrier, fleet, and anti–submarine operations; rocket, missile, and drone operations; and certain aerial refueling or similar operations.

STEP TAXI– To taxi a float plane at full power or high RPM.

STEP TURN– A maneuver used to put a float plane in a planing configuration prior to entering an active sea lane for takeoff. The STEP TURN maneuver should only be used upon pilot request.

STEPDOWN FIX- A fix permitting additional descent within a segment of an instrument approach procedure by identifying a point at which a controlling obstacle has been safely overflown.

STEREO ROUTE– A routinely used route of flight established by users and ARTCCs identified by a coded name; e.g., ALPHA 2. These routes minimize flight plan handling and communications.

STNR ALT RESERVATION– An abbreviation for Stationary Altitude Reservation commonly used in NOTAMs.

(See STATIONARY ALTITUDE RESERVATION.)

STOL AIRCRAFT– (See SHORT TAKEOFF AND LANDING AIRCRAFT.)

STOP ALTITUDE SQUAWK– Used by ATC to instruct a pilot to turn off the automatic altitude reporting feature of the aircraft transponder and ADS–B Out. It is issued when a verbally reported altitude varies by 300 feet or more from the automatic altitude report.

(See ALTITUDE READOUT.) (See TRANSPONDER.)

STOP AND GO– A procedure wherein an aircraft will land, make a complete stop on the runway, and then commence a takeoff from that point.

(See LOW APPROACH.) (See OPTION APPROACH.)

STOP BURST-(See STOP STREAM.)

STOP BUZZER-

(See STOP STREAM.)

STOP SQUAWK (Mode or Code)– Used by ATC to instruct a pilot to stop transponder and ADS–B transmissions, or to turn off only specified functions of the aircraft transponder (military).

(See STOP ALTITUDE SQUAWK.) (See TRANSPONDER.)

STOP STREAM– Used by ATC to request a pilot to suspend electronic attack activity.

(See JAMMING.)

STOPOVER FLIGHT PLAN– A flight plan format which permits in a single submission the filing of a sequence of flight plans through interim full-stop destinations to a final destination.

STOPWAY– An area beyond the takeoff runway no less wide than the runway and centered upon the extended centerline of the runway, able to support the airplane during an aborted takeoff, without causing structural damage to the airplane, and designated by the airport authorities for use in decelerating the airplane during an aborted takeoff.

STRAIGHT-IN APPROACH IFR- An instrument approach wherein final approach is begun without first having executed a procedure turn, not necessarily completed with a straight-in landing or made to straight-in landing minimums.

(See LANDING MINIMUMS.) (See STRAIGHT-IN APPROACH VFR.) (See STRAIGHT-IN LANDING.)

STRAIGHT-IN APPROACH VFR– Entry into the traffic pattern by interception of the extended runway centerline (final approach course) without executing any other portion of the traffic pattern.

(See TRAFFIC PATTERN.)

STRAIGHT-IN LANDING– A landing made on a runway aligned within 30° of the final approach course following completion of an instrument approach.

(See STRAIGHT-IN APPROACH IFR.)

STRAIGHT-IN LANDING MINIMUMS– (See LANDING MINIMUMS.) STRAIGHT-IN MINIMUMS-(See STRAIGHT-IN LANDING MINIMUMS.)

STRATEGIC PLANNING– Planning whereby solutions are sought to resolve potential conflicts.

sUAS-

(See SMALL UNMANNED AIRCRAFT SYSTEM.)

SUBSTITUTE ROUTE- A route assigned to pilots when any part of an airway or route is unusable because of NAVAID status. These routes consist of:

a. Substitute routes which are shown on U.S. Government charts.

b. Routes defined by ATC as specific NAVAID radials or courses.

c. Routes defined by ATC as direct to or between NAVAIDs.

SUNSET AND SUNRISE– The mean solar times of sunset and sunrise as published in the Nautical Almanac, converted to local standard time for the locality concerned. Within Alaska, the end of evening civil twilight and the beginning of morning civil twilight, as defined for each locality.

SUPPLEMENTAL WEATHER SERVICE LOCA-TION– Airport facilities staffed with contract personnel who take weather observations and provide current local weather to pilots via telephone or radio. (All other services are provided by the parent FSS.)

SUPPS- Refers to ICAO Document 7030 Regional Supplementary Procedures. SUPPS contain procedures for each ICAO Region which are unique to that Region and are not covered in the worldwide provisions identified in the ICAO Air Navigation Plan. Procedures contained in Chapter 8 are based in part on those published in SUPPS.

SURFACE AREA– The airspace contained by the lateral boundary of the Class B, C, D, or E airspace designated for an airport that begins at the surface and extends upward.

SURFACE METERING PROGRAM– A capability within Terminal Flight Data Manager that provides the user with the ability to tactically manage surface traffic flows through adjusting desired minimum and maximum departure queue lengths to balance surface demand with capacity. When a demand/capacity imbalance for a surface resource is predicted, a metering procedure is recommended. SURFACE VIEWER– A capability within the Traffic Flow Management System that provides situational awareness for a user–selected airport. The Surface Viewer displays a top–down view of an airport depicting runways, taxiways, gate areas, ramps, and buildings. The display also includes icons representing aircraft and vehicles currently on the surface, with identifying information. In addition, the display includes current airport configuration information such as departure/arrival runways and airport departure/arrival rates.

SURPIC- A description of surface vessels in the area of a Search and Rescue incident including their predicted positions and their characteristics.

(Refer to FAA Order JO 7110.65, Para 10–6–4, INFLIGHT CONTINGENCIES.)

SURVEILLANCE APPROACH– An instrument approach wherein the air traffic controller issues instructions, for pilot compliance, based on aircraft position in relation to the final approach course (azimuth), and the distance (range) from the end of the runway as displayed on the controller's radar scope. The controller will provide recommended altitudes on final approach if requested by the pilot.

(Refer to AIM.)

SUSPICIOUS UAS– Suspicious UAS operations may include operating without authorization, loitering in the vicinity of sensitive locations, (e.g., national security, law enforcement facilities, and critical infrastructure), or disrupting normal air traffic operations resulting in runway changes, ground stops, pilot evasive action, etc. The report of a UAS operation alone does not constitute suspicious activity. Development of a comprehensive list of suspicious activities is not possible due to the vast number of situations that could be considered suspicious. ATC must exercise sound judgment when identifying situations that could constitute or indicate a suspicious activity.

SWAP-

(See SEVERE WEATHER AVOIDANCE PLAN.)

SWSL-

(See SUPPLEMENTAL WEATHER SERVICE LOCATION.)

SYSTEM STRATEGIC NAVIGATION– Military activity accomplished by navigating along a preplanned route using internal aircraft systems to maintain a desired track. This activity normally requires a lateral route width of 10 NM and altitude range of 1,000 feet to 6,000 feet AGL with some route segments that permit terrain following.

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BRIEFING GUIDE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

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1. PARAGRAPH NUMBER AND TITLE: 1-2-1. WORD MEANINGS

2. BACKGROUND: FAA Order JO 7110.65, Air Traffic Control, paragraph 1-2-1, specifies state aircraft commander responsibilities and requirements for flight operations in accordance with the options of "due regard" or "operational." Subparagraph 1(c)(2) provides an option for the state aircraft commander to operate "within radar surveillance and radio communications of a surface radar facility." The use of the specific term "radar" precludes the option to operate within other viable surveillance systems.

3. CHANGE:

<u>OLD</u>	<u>NEW</u>
1-2-1. WORD MEANINGS	1-2-1. WORD MEANINGS
Title through n	No Change
o. Flight operations in accordance with the options of "due regard" or "operational" have the following requirements:	No Change
1. Obligates the authorized state aircraft commander to:	No Change
o1(a) through o1(b)	No Change
(c) Operate under at least one of the following conditions:	No Change
(1) In visual meteorological conditions	No Change

(2) Within <u>an area that is covered by an</u> <u>ATC</u> surveillance <u>source</u> and <u>in</u> communications <u>with ATC</u>, or within surveillance source service volume and radio communications range of a facility, Department of Homeland Security or DoD unit capable of providing the pilot assistance to operate with due regard to other aircraft; or

o1(a)(3) through **o1(b)(4)**

(2) Within radar surveillance and radio com-

munications of a surface radar facility; or

2. An understanding between the pilot and controller regarding the intent of the pilot and the status of the flight should be reached before the aircraft leaves ATC frequency.

NOTE-

(VMC); or

1. A pilot's use of the phrase "Going Tactical" does not indicate "Due Regard."

2. The above conditions provide for a level of safety equivalent to that normally given by International Civil Aviation Organization (ICAO) ATC agencies and fulfills U.S. Government obligations under Article 3 of the Chicago Convention of 1944 (<u>Reference (d)</u>), which stipulates there must be "due regard for the safety of navigation of civil aircraft" when flight is not being conducted under ICAO flight procedures.

Add

No Change No Change

No Change

2. The above conditions provide for a level of safety equivalent to that normally given by International Civil Aviation Organization (ICAO) ATC agencies and fulfills U.S. Government obligations under Article 3, paragraph <u>d</u>, of the Chicago Convention of 1944, which stipulates there must be "due regard for the safety of navigation of civil aircraft" when flight is not being conducted under ICAO flight procedures.

REFERENCE-

DoD Instruction (DODI) 4540.1, Enclosure 3, Para 3c(1)(c). DoD Flight Information Publication (FLIP), Section 8–6c(1).

1. PARAGRAPH NUMBER AND TITLE: 2-1-29. RVSM OPERATIONS

2. BACKGROUND: While guidance regarding controller responsibilities for aircraft operating in or transitioning through Reduced Vertical Separation Minimum (RVSM) airspace is provided in this paragraph, the actual parameters of the airspace are absent. Further research identifies that a definition of the altitudes that comprise RVSM airspace is not present anywhere in FAA Order JO 7110.65. To avoid confusion when applying the guidance found in this paragraph, ATO Safety and Technical Training has requested the addition of the definition of RVSM airspace, based on those found in FAA Order JO 7210.3, paragraph 6–9–1, and Advisory Circular (AC) 91–85B, Authorization of Aircraft and Operators for Flight in Reduced Vertical Separation Minimum (RVSM) Airspace.

3. CHANGE:

<u>OLD</u>

2-1-29. RVSM OPERATIONS

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

<u>NEW</u>

2-1-29. RVSM OPERATIONS

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

1. PARAGRAPH NUMBER AND TITLE: 2-6-2. PIREP SOLICITATION AND DISSEMINATION

2. BACKGROUND: There are conflicting requirements in FAA Order JO 7110.65, Air Traffic Control, and FAA Order JO 7110.10, Flight Services, as to when braking action reports trigger the need for controllers to solicit pilots reports (PIREPs). The requirement to begin soliciting PIREPs for braking action reports in JO 7110.65 states "braking action reports" and does not specify a particular value or criteria, while the requirement in JO 7110.10 states "braking action reports less than good." Since the value to trigger the solicitation of braking action reports is "less than good," JO 7110.65 will be amended to coincide with JO 7110.10.

3. CHANGE:

<u>OLD</u>

2–6–2. PIREP SOLICITATION AND DISSEMINATION

Title through a6

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.

<u>NEW</u>

2–6–2. PIREP SOLICITATION AND DISSEMINATION

No Change

7. Braking action reports less than good.

No Change No Change

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.

<u>REFERENCE–</u> FAA Order JO 7110.10, Para 8–2–5, Soliciting PIREPs. No Change

Delete

1. PARAGRAPH NUMBER AND TITLE:

3-1-5. VEHICLES/EQUIPMENT/PERSONNEL NEAR/ON RUNWAY

2. BACKGROUND: The Runway Safety Group, AJI–1400, has identified numerous events where vehicles/equipment/personnel were operating in the runway safety area (RSA) while aircraft were using the runway for takeoffs/landings. FAA Order JO 7210.3, Facility Operation and Administration, authorizes operations within an RSA during aircraft operations. This authorization is contingent upon the establishment of a letter of agreement (LOA) between the airport operator, ATC, and the FAA Technical Operations office supporting the airport defining the specific activities permitted in the RSA during aircraft operations.

3. CHANGE:

<u>OLD</u>

3–1–5. VEHICLES/EQUIPMENT/PERSON-NEL NEAR/ON RUNWAYS

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

PHRASEOLOGY-

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

Add

Add

<u>NEW</u>

3–1–5. VEHICLES/EQUIPMENT/PERSON-NEL NEAR/ON RUNWAYS

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

No Change

REFERENCE-

FAA Order JO 7210.3, Para 4–3–1, Letters of Agreement. NOTE– DoD–only airfields—See Service Manual and/or local operating procedures for guidance on aerodrome operations and LOA requirements.

1. PARAGRAPH NUMBER AND TITLE:

3-1-13. ESTABLISHING TWO-WAY COMMUNICATIONS

2. BACKGROUND: The COVID–19 pandemic continues to result in frequent closures of airport traffic control towers (ATCTs). These closures require FAA to accurately communicate the resulting status of airspace class and air traffic services to flight operators. Air traffic control personnel and flight operators have identified a number of safety concerns arising from miscommunications surrounding ATCT closures, specifically involving the status of Class Delta airspace. A Collaborative Decision Making (CDM) subteam was tasked with identifying and proposing resolutions to these safety issues. The use of the term "Class D services" has been identified as a

recurring source of misinterpretation by pilots who have understood it to mean that Class D airspace is no longer in effect, or to question what specific air traffic services remain available. The term "Class D services" is not defined for flight operators in any FAA order or publication. The term does not appear in either the Aeronautical Information Publication (AIP) or the Aeronautical Information Manual (AIM). It is not defined in FAA JO Order 7110.65, Air Traffic Control. The correct term, which is defined in the AIP, AIM and FAA JO Order 7110.65, is "airport traffic control service."

3. CHANGE:

<u>OLD</u> 3–1–13. ESTABLISHING TWO–WAY COMMUNICATIONS

Pilots are required to establish two-way radio communications before entering the Class D airspace. If the controller responds to a radio call with, "(a/c call sign) standby," radio communications have been established and the pilot can enter the Class D airspace. If workload or traffic conditions prevent immediate provision of <u>Class D</u> <u>services</u>, inform the pilot to remain outside the Class D airspace until conditions permit the services to be provided.

PHRASEOLOGY-

(A/c call sign) REMAIN OUTSIDE DELTA AIRSPACE AND STANDBY. REFERENCE-FAA Order JO 7110.65, Para 7-2-1, Visual Separation.

<u>NEW</u>

3–1–13. ESTABLISHING TWO–WAY COMMUNICATIONS

Pilots are required to establish two-way radio communications before entering the Class D airspace. If the controller responds to a radio call with, "(a/c call sign) standby," radio communications have been established and the pilot can enter the Class D airspace. If workload or traffic conditions prevent immediate provision of <u>airport</u> <u>traffic control services</u>, inform the pilot to remain outside the Class D airspace until conditions permit the services to be provided.

No Change

No Change

1. PARAGRAPH NUMBER AND TITLE: 3–5–1. SELECTION

2. BACKGROUND: Aircraft arrival and departure operations generally use the runway(s) most nearly aligned with the wind direction when the wind velocity is 5 knots or more. Other considerations such as runway length, available approach aids, noise abatement, delay/capacity considerations, and other factors may influence the selection of active runways.

National Transportation Safety Board (NTSB) Recommendation A-10-109 included recommendations concerning runway selection criteria that proactively considers current and developing wind conditions, including gusts. In addition, this change is responsive to safety issues identified in Air Traffic Safety Action Program (ATSAP) Corrective Action Request (CAR) 2012-009 Runway Configurations – Tailwind/Crosswind Operations.

3. CHANGE:

<u>OLD</u>

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:

<u>NEW</u>

3–5–1. SELECTION

a. <u>The ATCT supervisor/controller-in-charge</u> (CIC) determines which runway/s are <u>designated RUNWAY IN USE/ACTIVE</u> <u>RUNWAY/DUTY RUNWAY.</u>

NOTE-	Delete	
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	Delete	
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		
<u>noise sensitive.</u>		
<u>REFERENCE</u>	Delete	
1. Will be operationally advantageous, or	Delete	
2. Is requested by the pilot.	Delete	
b. <u>When conducting aircraft operations on other</u> <u>than the advertised active runway, state the runway</u> <u>in use.</u>	b. <u>Assign the runway/s most nearly aligned</u> with the wind when 5 knots or more, or the "calm wind" runway when less than 5 knots unless:	
Add	<u>1. Use of another runway is operationally advantageous.</u>	
Add	2. A Runway Use Program is in effect.	
Add	c. Tailwind and crosswind considerations take precedence over delay/capacity considerations, and noise abatement operations/procedures/ agreements.	
Add	d. If a pilot prefers to use a runway different from that specified, the pilot is expected to advise ATC. ATC may honor such requests as soon as is operationally practicable. ATC will advise pilots when the requested runway is noise-sensitive.	

1. PARAGRAPH NUMBER AND TITLE: 3-7-5. PRECISION APPROACH CRITICAL AREA

2. BACKGROUND: In May 2015, the Central Event Review Committee (ERC) submitted a corrective action request (CAR) due to ATSAP reports that indicated a lack in understanding, direction, and inconsistent application of the rules contained within JO 7110.65, paragraph 3–7–5, Precision Approach Critical Area. FAA Order JO 7110.65 was updated in November 2016 to clarify the application. The ERC requested additional review of the provisions to ensure the expected safety benefits articulated in the original CAR are achieved.

3. CHANGE:

<u>OLD</u>

3-7-5. PRECISION APPROACH CRITICAL AREA

a. <u>ILS critical area dimensions are described in</u> <u>FAA Order 6750.16, Siting Criteria for Instrument</u> <u>Landing Systems.</u> 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 <u>unless</u> 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-

<u>All</u> available weather sources METARs/SPECI/ PIREP<u>S/C</u>ontroller observations <u>are reported ceilings</u> <u>and/or visibilities and must be disseminated as de-</u> <u>scribed in FAA Order JO 7110.65 and FAA Order JO</u> 7210.3.

REFERENCE-

FAA Order JO 7110.65, Para 2–6–2 PIREP Solicitation and Dissemination.

FAA Order JO 7210.3, Para 2–9–2, Receipt and Dissemination of Weather Observations. FAA Order JO 7210.3, Para 10–3–1, SIGMENT and PIREP

HAA Order JO 7210.3, Para 10–3–1, SIGME<u>N</u>I and PIREP Handling.

FAA Order JO 7900.5, Para 6.4d, Equipment for Sky Condition.

NEW

3–7–5. PRECISION APPROACH CRITICAL AREA

a. Aircraft and vehicle access to the ILS critical area must be controlled to ensure the integrity of ILS course signals whenever the official weather observation is a ceiling of less than 800 feet or visibility less than 2 miles. <u>Unless the arriving aircraft has reported the runway in sight or is circling to land to another runway, d</u>o 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.

No Change

NOTE-

<u>When</u> available weather sources <u>such as</u> METARs/ SPECI/PIREP<u>s/c</u>ontroller <u>o</u>bservations <u>indicate</u> weather conditions are changing from VFR to IFR and are deteriorating, actions are expected to be taken to update the official weather observation.

REFERENCE-

FAA Order JO 7110.65, Para 2–6–2, PIREP Solicitation and Dissemination. FAA Order JO 7110.65, Para 2–6–3, Reporting Weather Conditions.

FAA Order JO 7110.65, Para 2–6–5, Disseminating Official Weather Information.

FAA Order JO 7210.3, Para 2–9–2, Receipt and Dissemination of Weather Observations.

FAA Order JO 7210.3, Para 10–3–1, SIGMET and PIREP Handling. FAA Order JO 7900.5, Para 6.4d, Equipment for Sky Condition. FAA Order 6750.16, Siting Criteria for Instrument Landing Systems.

1. PARAGRAPH NUMBER AND TITLE:

5–8–3. SUCCESSIVE OR SIMULTANEOUS DEPARTURES

2. BACKGROUND: In October of 2019, Flight Standards (FS) completed a safety case at the request of the NextGen Office concerning Closely Spaced Parallel Operations (CSPO) with simultaneous departure operations on runways separated by less than 2,500 feet. Prior studies regarding simultaneous departures only considered operations where runway centerlines are separated by 2,500 feet or more. This study identified conditions that meet the Air Traffic Organization (ATO) target level of safety of 1×10^{-9} . The study identified cases where simultaneous departures could be accommodated on runways with centerlines separated by at least 700 feet and less than 2,500 feet, provided release distance stagger between the departures were from 1,000 feet to 4,000 feet apart depending upon when courses diverged.

3. CHANGE:

<u>OLD</u>

5–8–3. SUCCESSIVE OR SIMULTANEOUS DEPARTURES

Title through b *REFERENCE*

c. When both aircraft are flying an RNAV SID:

1. Between successive departures from the same runway–1 mile if courses diverge by 10 degrees or more immediately after departure. (See FIG 5–8–1.)

NOTE-

This procedure does not apply when wake turbulence separation is required.

Add

<u>NEW</u> 5–8–3. SUCCESSIVE OR SIMULTANEOUS DEPARTURES

No Change No Change No Change

No Change

2. Between simultaneous departures from parallel runways/helicopter takeoff courses, authorize simultaneous takeoffs if the centerlines/takeoff courses are separated by at least 700 feet and less than 2,500 feet, courses diverge by 15 degrees or more, and departures are released in accordance with the release distance stagger stated in TBL 5-8-1 below.

<u>OLD</u>

Add

Add

<u>NEW</u>

<u>TBL 5-8-1</u> Departure Release Distances

Distance to Divergence	<u>Minimum</u>	<u>Release</u>
(Measured from the further	Centerline	Distance
<u>DER)</u>	<u>Separation</u>	<u>Stagger</u>
<u>Immediately</u>	<u>700</u>	<u>1000 feet</u>
No later than 5 NM	<u>1020</u>	2000 feet
No later than 8 NM	<u>1130</u>	<u>3000 feet</u>
No later than 11 NM	<u>1360</u>	4000 feet

Add

NOTE-

This procedure does not apply when wake turbulence separation is required.

<u>OLD</u>

Add

Add

<u>NEW</u>

<u>FIG 5-8-4</u> Simultaneous Dependent Departures



2. Between simultaneous departures from parallel runways/helicopter takeoff courses, authorize simultaneous takeoffs if the centerlines/takeoff courses are separated by at least 2,500 feet and courses diverge by 10 degrees or more immediately after departure. (See FIG 5–8–4, and FIG 5–8–5.)

NOTE-

RNAV SIDs specific to this paragraph are those SIDs constructed with a specific lateral path that begins at the DER.

FIG 5-8-4 through FIG 5-8-5

d. Between aircraft departing from diverging runways:

1. Nonintersecting runways. Authorize simultaneous takeoffs if runways diverge by 15 degrees or more. (See FIG $5-8-\underline{6}$.)

FIG 5-8-<u>6</u>

2. Intersecting runways and/or helicopter takeoff courses which diverge by 15 degrees or more. Authorize takeoff of a succeeding aircraft when the preceding aircraft has passed the point of runway and/or takeoff course intersection. When applicable, apply the procedure in paragraph 3-9-5, Anticipating Separation. (See FIG 5-8-7 and FIG 5-8-8-8.)

FIG 5-8-7 through FIG 5-8-14

<u>3</u>. Between simultaneous departures from parallel runways/helicopter takeoff courses, authorize simultaneous takeoffs if the centerlines/takeoff courses are separated by at least 2,500 feet and courses diverge by 10 degrees or more immediately after departure. (See FIG 5–8–<u>5</u>, and FIG 5–8–<u>6</u>.)

No Change

Renumber as **FIG 5–8–<u>5</u>** through **FIG 5–8–<u>6</u>** No Change

1. Nonintersecting runways. Authorize simultaneous takeoffs if runways diverge by 15 degrees or more. (See FIG 5-8-7.)

Renumber as FIG 5-8-7

2. Intersecting runways and/or helicopter takeoff courses which diverge by 15 degrees or more. Authorize takeoff of a succeeding aircraft when the preceding aircraft has passed the point of runway and/or takeoff course intersection. When applicable, apply the procedure in paragraph 3-9-5, Anticipating Separation. (See FIG 5-8-8 and FIG 5-8-9.)

Renumber as FIG 5–8–<u>8</u> through FIG 5–8–<u>15</u>

1. PARAGRAPH NUMBER AND TITLE: 7-4-1. VISUAL APPROACH

2. BACKGROUND: On August 7, 2020, AJV–P, Mission Support Services, Policy Directorate, signed an interpretation response to paragraph 7–4–1, Visual Approach, at the request of the Western Service Center Operations Support Group (OSG). Western OSG requested AJV–P to provide an interpretation of pilot and controller responsibilities when conducting a go–around after having completed a visual approach, the aircraft is not instructed to enter the airport traffic pattern, and when the overlying instrument flight rules (IFR) facility is not able to apply the provisions of paragraph 5–6–3, Vectors Below Minimum Altitude.

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 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 <u>instructed</u> to <u>enter the traffic pattern for landing and an altitude</u> <u>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.</u>

Add

Add

Add

NEW 7–4–1. VISUAL APPROACH No Change

a. At airports with an operating control tower, aircraft executing a go-around may be **<u>directed</u>** to:

1. Enter the traffic pattern for landing. An altitude assignment is not required. The pilot is expected to climb to pattern altitude and is responsible to maintain terrain and obstruction avoidance. ATC must provide approved separation or visual separation from other IFR aircraft, or

2. Proceed as otherwise instructed by ATC. The pilot is expected to comply with assigned instructions, and responsible to maintain terrain and obstruction avoidance until reaching an ATC assigned altitude. ATC is responsible to provide instructions to the pilot to facilitate a climb to the minimum altitude for instrument operations. ATC must provide approved separation or visual separation from other IFR aircraft.

NOTE-

The pilot is responsible for their own terrain and obstruction avoidance during a go-around after conducting a visual approach. The facility can assign headings towards the lowest terrain and obstructions. **b.** At airports without an operating control tower, aircraft executing a go-around are expected to complete a landing as soon as possible or contact ATC for further clearance. ATC must maintain 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

Runwavs.

FAA Order JO 7210.3, Para 10–3–15, Go-around/Missed Approach. P/CG Term – Go-around. AIM, Para 5–4–23, Visual Approach. **b.** At airports without an operating control tower, aircraft executing a go-around are expected to complete a landing as soon as possible or contact ATC for further clearance. ATC must maintain **approved** separation from other IFR aircraft.

No Change

1. PARAGRAPH NUMBER AND TITLE: 7–4–4. APPROACHES TO MULTIPLE RUNWAYS

2. BACKGROUND: In June 2021, changes were published to subparagraph 7-4-4c2 accounting for a 2018 interpretation response. Since these changes were published, it became clear the provisions associated with subparagraph c3 were not aligned with the formatting and layout of subparagraph c2; this effort makes readability easier and more concise.

3. CHANGE:

<u>OLD</u>

7–4–4. APPROACHES TO MULTIPLE RUNWAYS

Title through c

1. Parallel runways separated by less than 2,500 feet. Unless approved separation is <u>maintained</u>, 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 <u>final approach course</u> and visual separation is applied, controllers must advise the succeeding aircraft to maintain visual separation. Do not permit an aircraft to overtake another aircraft when wake turbulence separation is required.

c2 through c2(b)

(c) Provided that aircraft flight paths do not intersect, when the provisions of subparagraphs (a) <u>or</u> (b) are met, it is not necessary to apply any other type of separation with aircraft on the adjacent <u>final approach course</u>.

c2(d) through c3

NEW

7–4–4. APPROACHES TO MULTIPLE RUNWAYS

No Change

1. Parallel runways separated by less than 2,500 feet. Unless approved separation is **provided**, an aircraft must report sighting a preceding aircraft making an approach (instrument or visual) to the adjacent parallel runway. When an aircraft reports another aircraft in sight on the adjacent **extended runway centerline** and visual separation is applied, controllers must advise the succeeding aircraft to maintain visual separation. Do not permit an aircraft to overtake another aircraft when wake turbulence separation is required.

No Change

(c) Provided that aircraft flight paths do not intersect, when the provisions of subparagraphs (a)<u>.</u> (b)<u>, or (d)</u> are met, it is not necessary to apply any other type of separation with aircraft on the adjacent **extended runway centerline**.

(a) When the flight paths do not intersect, visual approaches may be conducted simultaneously provided that approved separation is maintained until one of the aircraft has been issued and the pilot has acknowledged receipt of the visual approach clearance.

Add

Add

(b) <u>Visual approaches may be conducted to one</u> <u>runway while visual or instrument approaches are</u> <u>conducted simultaneously to other runways</u>, <u>provided the conditions of subparagraph (a) are</u> <u>met.</u>

(c) Provided the flight paths do not intersect, when the provisions of subparagraphs (a) <u>and</u> (b) are met, it is not necessary to apply any other type of separation with aircraft on the adjacent <u>final approach course</u>.

(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. The 30-degree intercept angle is not necessary when approved separation is maintained until the aircraft are established on the extended centerline of the assigned runway.

(a) When aircraft are approaching from opposite base legs, or one aircraft is turning to final and another aircraft is established on the extended centerline for the adjacent runway, approved separation is provided until the aircraft are:

(1) Assigned a heading or established on a direct course to a fix or cleared on an RNAV/instrument approach procedure which will intercept the extended centerline of the runway at an angle not greater than 30 degrees, and,

(2) One of the aircraft has been issued and the pilot has acknowledged receipt of the visual approach clearance.

(b) When aircraft are approaching from the same side of the airport and the lead aircraft is assigned the nearer runway, approved separation is maintained or pilot-applied visual separation is provided by the succeeding aircraft until intercepting the farther adjacent runway extended centerline.

(c) Provided that aircraft flight paths do not intersect, when the provisions of subparagraphs (a). (b). or (d) are met, it is not necessary to apply any other type of separation with aircraft on the adjacent extended runway centerline.

(d) When aircraft are approaching from the same side of the airport and the lead aircraft is assigned the farther runway, the succeeding aircraft must be assigned a heading that will intercept the extended centerline of the nearer runway at an angle not greater than 30 degrees. Approved separation must be maintained or pilot-applied visual separation must be provided by the succeeding aircraft until it is established on the extended centerline of the nearer runway.

No Change

3. Variances between heading assigned to intercept the extended centerline of the runway and aircraft ground track are expected due to the effect of wind and course corrections after completion of the turn and pilot acknowledgment of a visual approach clearance.

4. Procedures using Radius-to-Fix legs that intercept final may be used in lieu of 30-degree intercept provisions contained in this paragraph.

Add

No Change

No Change

(e) Visual approaches may be conducted to one runway while visual or instrument approaches are conducted simultaneously to other runways, provided the conditions of subparagraph (a), (b), or (d) are met.

1. PARAGRAPH NUMBER AND TITLE:

7–7–3. SEPARATION

7-7-7. TRSA DEPARTURE INFORMATION

2. BACKGROUND: A review of FAA Order JO 7110.65, Air Traffic Control, paragraph 7–7–3, Separation, and paragraph 7–7–7, TRSA Departure Information, has identified wording pertaining to visual flight rules (VFR) aircraft that may lead to misinterpretation. The non–specific reference in paragraph 7–7–3 to "separating VFR aircraft from VFR/IFR aircraft" and the wording structure of subparagraph 7–7–7c, "VFR participating aircraft," has generated confusion regarding the exact intent of the guidance provided. Additionally, paragraph 7–7–7 does not align with similar wording found in the Aeronautical Information Manual and the Pilot/Controller Glossary.

3. CHANGE:

<u>OLD</u>

7–7–3. SEPARATION

Separate VFR aircraft from <u>VFR/IFR</u> aircraft by any one of the following:

<u>OLD</u>

7-7-7. TRSA DEPARTURE INFORMATION

Title through b

c. Inform <u>VFR</u> participating aircraft when leaving the TRSA.

PHRASEOLOGY– LEAVING THE (name) TRSA,

and as appropriate,

RESUME OWN NAVIGATION, REMAIN THIS FRE-QUENCY FOR TRAFFIC ADVISORIES, RADAR SER-VICE TERMINATED, SQUAWK ONE TWO ZERO ZERO.

NEW

7–7–3. SEPARATION

Separate **participating** VFR aircraft from IFR aircraft **and other participating VFR aircraft** by any one of the following:

<u>NEW</u>

7-7-7. TRSA DEPARTURE INFORMATION

No Change

c. Inform participating \underline{VFR} aircraft when leaving the TRSA.

1. PARAGRAPH NUMBER AND TITLE: 9-3-2. SEPARATION MINIMA

2. BACKGROUND: FAA Order JO 7110.65, paragraph 9–3–2, defines the requirements to separate nonparticipating aircraft from active special use airspace, Air Traffic Control assigned airspace (ATCAAs), and stationary Altitude Reservations (ALTRVs). Additionally, it stipulates exceptions can be made and points to FAA Order JO 7210.3 for further clarification. In clarifying this requirement, FAA Order JO 7210.3, paragraph 2–1–18, provides additional explanation and examples of possible separation reductions.

3. CHANGE:

<u>OLD</u>

9-3-2. SEPARATION MINIMA

Title through b

1. Some prohibited/restricted/warning areas are established for security reasons or to contain hazardous activities <u>not involving aircraft</u> <u>operations</u>. Where facility management has identified these areas as outlined in FAA Order JO 7210.3, Facility Operation and Administration, vector aircraft to remain clear of the peripheral boundary.

NEW

9–3–2. SEPARATION MINIMA

No Change

1. Some prohibited/restricted/warning areas are established for security reasons or to contain hazardous activities <u>and do not require radar</u> <u>separation of 3 miles (FL 600 and above – 6</u> <u>miles) from the special use airspace</u>. Where facility management has identified these areas as outlined in FAA Order JO 7210.3, Facility Operation and Administration, vector aircraft to remain clear of the peripheral boundary.