CHANGE

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

JO 7110.65X
CHG 3

Effective Date:
February 28, 2019

SUBJ: Air Traffic Control

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

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

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

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

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

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 Retain this transmittal until superseded by a new basic order.

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

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Explanation of Changes
Change 3

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

a. 2–6–2. PIREP SOLICITATION AND DISSEMINATION

This change incorporates the ATO's Top 5 Pilot Weather Report (PIREP) Corrective Action Plan to ensure FAA Order JO 7110.65 contains consistent guidance regarding the solicitation and dissemination of PIREPs. This change includes soliciting more information about volcanic eruptions, ash clouds, and detection of sulphur gases and includes updated dissemination terminology.

b. 3–1–7. POSITION DETERMINATION

This change adds a requirement for air traffic control specialists (ATCS) to verify the position of personnel and/or equipment prior to authorizing access to movement areas.

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

This change, applicable during Intersecting Runway/Intersecting Flight Path Operations, allow ATCSs to determine by visual reference that an aircraft will exit the runway at a certain point. This change cancels and incorporates N JO 7110.753, Intersecting Runway, Intersecting Flight Path Operations, effective July 25, 2018.

d. 3–10–5. LANDING CLEARANCE

This change requires ATCSs to emphasize the changed runway number when issuing a landing clearance by stating the runway number in the change to runway instruction as well as the runway number in the landing clearance. This change cancels and incorporates N JO 7110.761, Landing Clearance, effective October 26, 2018.

e. 4–2–2. CLEARANCE PREFIX
4–3–4. DEPARTURE RESTRICTIONS, CLEARANCE VOID TIMES, HOLD FOR RELEASE, AND RELEASE TIMES
4–3–9. VFR RELEASE OF IFR DEPARTURE

This change provides instruction to the ATCS on how to properly relay clearance request information to the Flight Data Communications Specialists at Air Route Traffic Control Centers.

f. 4–3–2. DEPARTURE CLEARANCES

This change adds language to ensure that ATCSs understand their responsibilities when assigning a Departure Procedure (DP) or Diverse Vector Area (DVA). It explains that pilots may be required to comply with specific performance criteria that must be understood and accepted before they depart. Because of these criteria, ATCSs may be subject to restrictions on interrupting the climb of, or changing headings on, aircraft that are flying these procedures. This change cancels and incorporates N JO 7110.754, Departure Clearances, effective September 13, 2018.

g. 4–4–2. ROUTE STRUCTURE TRANSITIONS
5–5–1. APPLICATION
6–5–4. MINIMA ALONG OTHER THAN ESTABLISHED AIRWAYS OR ROUTES

This change allows aircraft, during nonradar operations, to transition from one point–to–point RNAV random route to another, utilizing an impromptu RNAV random route of short duration, provided vertical separation is utilized to facilitate the transition.

h. 4–4–5. CLASS G AIRSPACE

This change adds a new note to the paragraph that restates services to be provided in Class G airspace. Additionally, three references are added; one to FAA Order JO 7110.65, Paragraph 2–1–1, ATC Service, one to the Pilot/Controller Glossary (P/CG) regarding Class G Airspace, and a final one to the P/CG definition of uncontrolled airspace.

i. 4–8–11. PRACTICE APPROACHES

This change clarifies that separation services should only be required during the missed approach

segment of a VFR practice approach if they were required procedurally during the approach segment as detailed by paragraph 4−8−11.

j. 5−5−7. PASSING OR DIVERGING

This change clarifies that the 15−degrees/45 degrees (as applicable) divergence requirements may be accomplished with assigned courses, radar vectors, or a combination of these.

k. 5−7−1. APPLICATION

This change adds language clarifying that a climb or descend via clearance cancels any previously assigned speed.

l. 6−1−1. DISTANCE

This change clarifies the requirement for the use of direct pilot/ATCS VHF/UHF voice communication for application of distance−based nonradar procedures contained in FAA Order JO 7110.65, Chapter 6, and aligns with ICAO PANS−ATM Doc. 4444 requirements. This change cancels and incorporates N JO 7110.758, VHF/UHF Voice Communications, effective September 10, 2018.

m. 7−2−1. VISUAL SEPARATION

This change amends subparagraph 7−2−1a1(f) and authorizes ATCSs at ATCTs to apply visual separation between their traffic and traffic at an adjacent facility through the use of tower−applied visual separation without the need for an approved waiver. This change cancels and incorporates N JO 7110.752, Visual Separation, effective June 18, 2018.

n. 7−9−4. SEPARATION

This change explains aircraft types weighing 19,000 pounds or less are listed in FAA Order JO 7360.1, and Note 2 is updated to direct readers to that order.

o. 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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TBL 1–1–3
Military Operations Interface Offices

Branch	Address
U.S. Navy	Department of the Navy Chief of Naval Operations N980A, NAATSEA 2000 Navy Pentagon (5D453) Washington, D.C. 20350–2000
U.S. Air Force	HQ AFFSA 5316 S. Douglas Blvd Bldg 8400, Room 232 Oklahoma City, OK 73150
U.S. Army	Director USAASA (MOAS–AS) 9325 Gunston Road, Suite N319 Ft. Belvoir, VA 22060–5582

NOTE–
Terminal: Headquarters Air Force Flight Standards Agency is the approval authority for any USAF procedures or minima that differ from those specified herein and that involve military aircraft only.

REFERENCE–
FAA Order JO 7110.65, Para 2–1–12, Military Procedures
FAA Order JO 7110.65, Para 3–1–3 , Use of Active Runways.

1–1–12. SAFETY MANAGEMENT SYSTEM (SMS)

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

1–1–13. REFERENCES TO FAA NON–AIR TRAFFIC ORGANIZATIONS

When references are made to regional office organizations that are not part of the Air Traffic Organization (i.e., Communications Center, Flight Standards, Airport offices, etc.), the facility should contact the FAA region where the facility is physically located – not the region where the facility's service area office is located.

1–1–14. DISTRIBUTION

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

be used when the aircraft is airborne to indicate a request for special handling.

REFERENCE–
FAA Order JO 7610.4, Para 12–1–1, Applications.

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

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

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

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

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

REFERENCE–
FAA Order JO 7110.65, Para 9–2–18, SAMP.
FAA Order JO 7210.3, Para 5–3–4, Atmosphere Sampling For Nuclear Contamination.
FAA Order JO 7610.4, Para 12–4–3, Atmospheric Sampling For Nuclear Contamination.

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

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

REFERENCE–
FAA Order JO 7610.4, Para 12–6–1, Applications.

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

REFERENCE–
FAA Order JO 7110.65, Para 9–2–20, Weather Reconnaissance Flights.

l. Provide priority handling to expedite the movement of OPEN SKIES Treaty observation and demonstration (F and D) flights.

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

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

REFERENCE–
FAA Order JO 7110.65, Para 9–2–23, Open Skies Treaty Aircraft.
FAA Order JO 7210.3, Para 5–3–7, Open Skies Treaty Aircraft Priority Flight (F and D). Treaty on Open Skies, Treaty Document, 102–37.

m. Provide priority handling, as required to expedite Flight Check aircraft.

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

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

n. IFR aircraft must have priority over SVFR aircraft.

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

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

REFERENCE–
FAA Order JO 7110.65, Para 2–3–2, En Route Data Entries.
FAA Order JO 7110.65, Para 2–2–15, North American Route Program (NRP) Information.
FAA Order JO 7110.65, Para 4–2–5, Route or Altitude Amendments.
FAA Order JO 7210.3, Chapter 18, Section 17, North American Route Program.

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

REFERENCE–
FAA Order JO 7210.3, Para 18–4–5, Diversion Recovery.

q. If able, provide priority handling to FALLEN HERO flights when "FALLEN HERO" is indicated in the remarks section of the flight plan or requested in air/ground communications.

2–1–5. EXPEDITIOUS COMPLIANCE

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

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

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

2–1–6. SAFETY ALERT

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

NOTE–

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

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

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

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

PHRASEOLOGY–

LOW ALTITUDE ALERT (call sign),

CHECK YOUR ALTITUDE IMMEDIATELY.

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

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

REFERENCE–

P/CG Term – Final Approach – IFR

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

PHRASEOLOGY–

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

and/or

CLIMB/DESCEND (specific altitude if appropriate) IMMEDIATELY.

EXAMPLE–

"Traffic Alert, Cessna Three Four Juliet, 12'o clock, 1 mile advise you turn left immediately."

or

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

REFERENCE–

FAA Order JO 7110.65, Para 5–14–1, Conflict Alert (CA) and Mode C Intruder (MCI) Alert.
FAA Order JO 7110.65, Para 5–14–2, En Route Minimum Safe Altitude Warning (E–MSAW).
FAA Order JO 7110.65, Para 5–15–6, CA/MCI.
FAA Order JO 7110.65, Para 5–2–24, Altitude Filters.
FAA Order JO 7110.65, Para 2-1-21, Traffic Advisories

2–1–7. INFLIGHT EQUIPMENT MALFUNCTIONS

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

NOTE–

Inflight equipment malfunctions include partial or complete failure of equipment, which may affect either safety, separation standards, and/or the ability of the flight to proceed under IFR, or in Reduced Vertical Separation Minimum (RVSM) airspace, in the ATC system. Control-

1. NADIN II input format as described in NAS MDs for:

(a) Flight Plan Messages:

(1) Active.

(2) Proposed.

(b) Amendment messages.

(c) Cancellation messages.

(d) Correction messages.

2–2–15. NORTH AMERICAN ROUTE PROGRAM (NRP) INFORMATION

a. "NRP" must be retained in the remarks section of the flight plan if the aircraft is moved due to weather, traffic, or other tactical reasons.

NOTE–
Every effort should be made to ensure the aircraft is returned to the original filed flight plan/altitude as soon as conditions warrant.

b. If the route of flight is altered due to a pilot request, "NRP" must be removed from the remarks section of the flight plan.

c. "NRP" must not be entered in the remarks section of a flight plan, unless prior coordination is accomplished with the ATCSCC or as prescribed by international NRP flight operations procedures.

d. The en route facility within which an international flight entering the conterminous U.S. requests to participate in the NRP must enter "NRP" in the remarks section of the flight plan.

REFERENCE–
FAA Order JO 7110.65, Para 2–1–4, Operational Priority.
FAA Order JO 7110.65, Para 2–3–2, En Route Data Entries.
FAA Order JO 7110.65, Para 4–2–5, Route or Altitude Amendments.
FAA Order JO 7210.3, Chapter 18, Section 17, North American Route Program.

3. Flight plans.

d. Fourth priority. Movement messages on VFR aircraft.

2–4–11. PRIORITY INTERRUPTION

Use the words "emergency" or "control" for interrupting lower priority messages when you have an emergency or control message to transmit.

2–4–12. INTERPHONE MESSAGE FORMAT

Use the following format for interphone intra/interfacility communications:

a. Both the caller and receiver identify their facility and/or position in a manner that ensures they will not be confused with another position.

NOTE–
Other means of identifying a position, such as substituting departure or arrival gate/fix names for position identification, may be used. However, it must be operationally beneficial, and the procedure fully covered in a letter of agreement or a facility directive, as appropriate.

EXAMPLE–
Caller: *"Albuquerque Center Sixty Three, Amarillo Departure."*

Receiver: *"Albuquerque Center."*

b. Between two facilities which utilize numeric position identification, the caller must identify both facility and position.

EXAMPLE–
Caller: *"Albuquerque Sixty Three, Fort Worth Eighty Two."*

c. Caller states the type of coordination to be accomplished when advantageous. For example, handoff or APREQ.

d. The caller states the message.

e. The receiver states the response to the caller's message followed by the receiver's operating initials.

f. The caller states his or her operating initials.

EXAMPLE–
1.
Caller: *"Denver High, R Twenty–five."*

Receiver: *"Denver High."*

Caller: *"Request direct Denver for Northwest Three Twenty–eight."*

Receiver: *"Northwest Three Twenty–eight direct Denver approved. H.F."*

Caller: *"G.M."*

2.
Receiver: *"Denver High, Go ahead override."*

Caller: *"R Twenty–five, Request direct Denver for Northwest Three Twenty–eight."*

Receiver: *"Northwest Three Twenty–eight direct Denver approved. H.F."*

Caller: *"G.M."*

3.
Caller: *("Bolos" is a departure gate in Houston ARTCC's Sabine sector)–"Bolos, Houston local."*

Receiver: *"Bolos."*

Caller: *"Request Flight Level three five zero for American Twenty–five."*

Receiver: *"American Twenty–five Flight Level three five zero approved, A.C."*

Caller: *"G.M."*

4.
Caller: *"Sector Twelve, Ontario Approach, APREQ."*

Receiver: *"Sector Twelve."*

Caller: *"Cactus Five forty–two heading one three zero and climbing to one four thousand."*

Receiver: *"Cactus Five forty–two heading one three zero and climbing to one four thousand approved. B.N."*

Caller: *"A.M."*

5.
Caller: *"Zanesville, Columbus, seventy–three line, handoff."*

Receiver: *"Zanesville."*

Caller: *"Five miles east of Appleton VOR, United Three Sixty–six."*

Receiver: *"United Three Sixty–six, radar contact, A.Z."*

Caller: *"M.E."*

g. Identify the interphone voice line on which the call is being made when two or more such lines are collocated at the receiving operating position.

EXAMPLE–
"Washington Center, Washington Approach on the Fifty Seven line."

"Chicago Center, O'Hare Tower handoff on the Departure West line."

h. *TERMINAL.* The provisions of subparas a, b, c, e, f, g, and Paragraph 2–4–13, Interphone Message Termination, may be omitted provided:

1. Abbreviated standard coordination procedures are contained in a facility directive describing the specific conditions and positions that may utilize an abbreviated interphone message format; and

2. There will be no possibility of misunderstanding which positions are using the abbreviated procedures.

2–4–13. INTERPHONE MESSAGE TERMINATION

Terminate interphone messages with your operating initials.

2–4–14. WORDS AND PHRASES

a. Use the words or phrases in radiotelephone and interphone communication as contained in the P/CG or, within areas where Controller Pilot Data Link Communications (CPDLC) is in use, the phraseology contained in the applicable CPDLC message set.

b. The word *super* must be used as part of the identification in all communications with or about super aircraft.

c. The word *heavy* must be used as part of the identification in all communications with or about heavy aircraft.

d. *EN ROUTE.* The use of the words *super* or *heavy* may be omitted except as follows:

1. In communications with a terminal facility about super or heavy aircraft operations.

2. In communications with or about super or heavy aircraft with regard to an airport where the en route center is providing approach control service.

3. In communications with or about super or heavy aircraft when the separation from a following aircraft may become less than 5 miles by approved procedure.

4. When issuing traffic advisories.

EXAMPLE–
"United Fifty–Eight Heavy."

NOTE–
Most airlines will use the word "super" or "heavy" following the company prefix and flight number when establishing communications or when changing frequencies within a terminal facility's area.

e. When in radio communications with "Air Force One" or "Air Force Two," do not add the heavy designator to the call sign. State only the call sign "Air Force One/Two" regardless of the type aircraft.

2–4–15. EMPHASIS FOR CLARITY

Emphasize appropriate digits, letters, or similar sounding words to aid in distinguishing between similar sounding aircraft identifications. Additionally:

a. Notify each pilot concerned when communicating with aircraft having similar sounding identifications.

EXAMPLE–
"United Thirty–one United, Miami Center, U.S. Air Thirty–one is also on this frequency, acknowledge."

"U.S. Air Thirty–one U.S. Air, Miami Center, United Thirty–one is also on this frequency, acknowledge."

REFERENCE–
FAA Order JO 7110.65, Para 2–4–20, Aircraft Identification.
FAA Order JO 7210.3, Para 2–1–14, Aircraft Identification Problems.

b. Notify the operations supervisor–in-charge of any duplicate flight identification numbers or phonetically similar-sounding call signs when the aircraft are operating simultaneously within the same sector.

REFERENCE–
FAA Order JO 7210.3, Para 2–1–14, Aircraft Identification Problems.

NOTE–
This is especially important when this occurs on a repetitive, rather than an isolated, basis.

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

EXAMPLE–

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

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

EXAMPLE–

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

k. Frequencies.

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

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

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

EXAMPLE–

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

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

EXAMPLE–

Frequency	Statement
275.8 MHz	"Local channel one six."

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

l. Speeds.

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

EXAMPLE–

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

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

EXAMPLE–

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

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

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

2–4–18. NUMBER CLARIFICATION

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

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

2–4–19. FACILITY IDENTIFICATION

Identify facilities as follows:

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

EXAMPLE–
"Columbus Tower."
"Barksdale Tower."
"Navy Jacksonville Tower."

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

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

EXAMPLE–
"Denver Approach."
"Griffiss Approach."
"Navy Jacksonville Approach."

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

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

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

EXAMPLE–
"Bradford High, Handoff."

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

EXAMPLE–
"Altoona Radio."

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

EXAMPLE–
"Corpus Christi G–C–A."
"Davison G–C–A."

2–4–20. AIRCRAFT IDENTIFICATION

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

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

REFERENCE–
FAA Order JO 7110.65, Para 2–4–8, Radio Message Format.
FAA Order JO 7110.65, Para 2–4–9, Abbreviated Transmissions.
FAA Order JO 7110.65, Para 2–4–15, Emphasis for Clarity.
FAA Order JO 7110.65, Para 2–4–17, Numbers Usage.

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

EXAMPLE–
Air traffic controller's initiated call:

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

Responding to pilot's initial or subsequent call:

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

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

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

REFERENCE–
FAA Order JO 7210.3, Para 2–1–14, Aircraft Identification Problems. ■

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

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

EXAMPLE–
"American Fifty–Two."
"Delta One Hundred."
"Eastern Metro One Ten."
"General Motors Thirty Fifteen."
"United One Zero One."
"Delta Zero One Zero."
"TWA Ten Zero Four."

NOTE–
Air carrier and other civil aircraft having FAA authorized call signs may be pronounced using single digits if necessary for clarity.

EXAMPLE–
"United Five One Seven."
"United Five Seven Zero."

3. Air taxi and commercial operators not having FAA authorized call signs. State the prefix "TANGO" on initial contact, if used by the pilot, followed by the registration number. The prefix may be dropped in subsequent communications.

EXAMPLE–
"Tango Mooney Five Five Five Two Quebec."
"Tango November One Two Three Four."

4. Air carrier/taxi ambulance. State the prefix "MEDEVAC" if used by the pilot, followed by the call sign and flight number in group form.

EXAMPLE–
"MEDEVAC Delta Fifty-One."

5. Civilian air ambulance. State the word *"MEDEVAC"* followed by the numbers/letters of the registration number.

EXAMPLE–
"MEDEVAC Two Six Four Six."

6. U.S. military. State one of the following:

(a) The service name, followed by the word "copter," when appropriate, and the last 5 digits of the serial number.

EXAMPLE–
"Navy Five Six Seven One Three."
"Coast Guard Six One Three Two Seven."
"Air Guard One Three Five Eight Six."
"Army Copter Three Two One Seven Six."

NOTE–
If aircraft identification becomes a problem, the procedures reflected in FAA Order JO 7210.3, Facility Operation and Administration, Paragraph 2–1–14, Aircraft Identification Problems, will apply.

(b) Special military operations. State one of the following followed by the last 5 digits of the serial number:

(c) Air evacuation flights. "AIR EVAC," "MARINE AIR EVAC," or "NAVY AIR EVAC."

EXAMPLE–
"Air Evac One Seven Six Five Two."

(d) Rescue flights. (Service name) "RESCUE."

EXAMPLE–
"Air Force Rescue Six One Five Seven Niner."

(e) Air Mobility Command. "REACH."

EXAMPLE–
"Reach Seven Eight Five Six Two."

(f) Special Air Mission. "SAM."

EXAMPLE–
"Sam Niner One Five Six Two."

(g) USAF Contract Aircraft "LOGAIR."

EXAMPLE–
"Logair Seven Five Eight Two Six."

(h) Military tactical and training:

(1) U.S. Air Force, Air National Guard, Military District of Washington priority aircraft, and USAF civil disturbance aircraft. Pronounceable words of 3 to 6 letters followed by a 1 to 5 digit number.

EXAMPLE–
"Paul Two Zero."
"Pat One Five Seven."
"Gaydog Four."

NOTE–
When the "Z" suffix described in para 2–3–7, USAF/USN Undergraduate Pilots, is added to identify aircraft piloted by USAF undergraduate pilots, the call sign will be limited to a combination of six characters.

(2) Navy or Marine fleet and training command aircraft. The service name and 2 letters, or a digit and a letter (use letter phonetic equivalents), followed by 2 or 3 digits.

EXAMPLE–
"Navy Golf Alfa Two One."
"Marine Four Charlie Two Three Six."

7. Presidential aircraft and Presidential family aircraft:

(a) When the President is aboard a military aircraft, state the name of the military service, followed by the word "One."

EXAMPLE–
"Air Force One."
"Army One."
"Marine One."

(b) When the President is aboard a civil aircraft, state the words "Executive One."

(c) When a member of the President's family is aboard any aircraft, if the U.S. Secret Service or the White House Staff determines it is necessary, state the words "Executive One Foxtrot."

REFERENCE–
FAA Order JO 7110.65, Para 2–1–4, Operational Priority.

8. Vice Presidential aircraft:

(a) When the Vice President is aboard a military aircraft, state the name of the military service, followed by the word "Two."

EXAMPLE–
"Air Force Two."
"Army Two."
"Marine Two."

(b) When the Vice President is aboard a civil aircraft, state the words "Executive Two."

(c) When a member of the Vice President's family is aboard any aircraft, if the U.S. Secret Service or the White House Staff determines it is necessary, state the words "Executive Two Foxtrot."

REFERENCE–
FAA Order JO 7110.65, Para 2–1–4, Operational Priority.

9. DOT and FAA flights. The following alphanumeric identifiers and radio/interphone call signs are established for use in air/ground communications when the Secretary of Transportation, Deputy Secretary of Transportation, FAA Administrator or FAA Deputy Administrator have a requirement to identify themselves. (See TBL 2–4–2.)

TBL 2–4–2
DOT and FAA Alphanumeric Identifiers and Call Signs

Official	Identifier	Call Sign
Secretary of Transportation	DOT–1	Transport–1
Deputy Secretary of Transportation	DOT–2	Transport–2
Administrator, Federal Aviation Administration	FAA–1	Safeair–1
Deputy Administrator, Federal Aviation Administration	FAA–2	Safeair–2

10. Other Special Flights.

(a) Department of Energy flights. State the letters "R–A–C" (use phonetic alphabet equivalents) followed by the last 4 separate digits of the aircraft registration number.

EXAMPLE–
"Romeo Alfa Charlie One Six Five Three."

(b) Flight Inspection of navigational aids. State the call sign "FLIGHT CHECK" followed by the digits of the registration number.

EXAMPLE–
"Flight Check Three Niner Six Five Four."

(c) USAF aircraft engaged in aerial sampling missions. State the call sign "SAMP" followed by the last three digits of the serial number.

EXAMPLE–
"SAMP Three One Six."

REFERENCE–
FAA Order JO 7110.65, Para 9–2–18, SAMP.

11. Use a pilot's name in identification of an aircraft only in special or emergency situations.

b. Foreign registry. State one of the following:

1. Civil. State the aircraft type or the manufacturer's name followed by the letters/numbers of the aircraft registration, or state the letters or digits of the aircraft registration or call sign.

EXAMPLE–
"Stationair F–L–R–B."
"C–F–L–R–B."

NOTE–
Letters may be spoken individually or phonetically.

2. Air carrier. The abbreviated name of the operating company followed by the letters or digits of the registration or call sign.

EXAMPLE–
"Air France F–L–R–L–G."

3. The flight number in group form, or you may use separate digits if that is the format used by the pilot.

EXAMPLE–
"Scandinavian Sixty–eight."
"Scandinavian Six Eight."

4. Foreign Military. Except for military services identified in FAA Order JO 7340.2, Contractions, the name of the country and the military service followed by the separate digits or letters of the registration or call sign. For military services listed in FAA Order JO 7340.2, the approved telephony followed by the separate digits of the serial number.

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 DISSEMINATION

Emphasis must be placed on the solicitation and dissemination of 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. Null reports are critical to aviation weather forecasters and pilots and must be disseminated. Controllers must provide the information in sufficient detail to assist pilots in making decisions pertinent to flight safety.

REFERENCE–
FAA Order JO 7110.65, Para 3–1–8, Low Level Wind Shear/Microburst Advisories.
FAA Order JO 7110.65, Para 3–3–4, Braking Action.
P/CG Term– Braking Action.
FAA Order JO 7210.3, Para 6–3–1, Handling of SIGMETs, CWAs, and PIREPs.
AIM, Para 7–5–9, Flight Operations in Volcanic Ash.
FAA Order JO 7210.3, Para 10–3–1, SIGMET and PIREP Handling
FAA Order JO 7110.10, Chapter 9, Section 2, Pilot Weather Report (UA/UUA)

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 sky conditions when available. Additionally, when providing approach control services, ensure that at least one descent/climb out PIREP 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 eruptions, ash clouds, and/or detection of sulfur gases in the cabin: sulfur dioxide (SO_2) or hydrogen sulfide (H_2S).

(a) If only SO_2 or H_2S are detected with no reported volcanic ash clouds, ask the pilot if volcanic ash clouds are in the vicinity.

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 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. The word "chop" may be used by pilots in lieu of the term "turbulence" in pilot communications with ATC. Chop is a type of turbulence.

EXAMPLE–
"Delta Seven Twenty–one, a Boeing Seven Thirty–seven, previously reported wind shear, loss of two five knots at four hundred feet."
"Alaska One, a Boeing Seven Thirty–seven, previously reported wind shear, gain of two–five knots between niner hundred and six hundred feet, followed by a loss of five zero knots between five hundred feet and the surface."

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

2. *EN ROUTE.* Relay all PIREPs to the facility weather coordinator and to all aircraft in sector(s) below and adjacent to the report.

3. *TERMINAL.* Relay all 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 CONDITIONS

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

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

2. Forward tower visibility observations to the weather observer.

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

b. 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, Paragraph 7–1–14, ATC Inflight Weather Avoidance Assistance.

PHRASEOLOGY–
WEATHER/CHAFF AREA BETWEEN (number) O'CLOCK AND (number) O'CLOCK (number) MILES, and/or (number) MILE BAND OF WEATHER/CHAFF FROM (fix or number of miles and direction from fix) TO (fix or number of miles and direction from fix).

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

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

1. LIGHT.

2. MODERATE.

3. HEAVY.

4. EXTREME.

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

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

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

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

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

d. *TERMINAL:* In STARS, ARTS, and other systems that display six levels of precipitation intensities, 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 limits of the lateral deviation area.

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

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

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

NOTE–
After a climb via or descend via clearance has been issued, a vector/deviation off of a SID/STAR cancels the altitude restrictions on the procedure. The aircraft's Flight Management System (FMS) may be unable to process crossing altitude restrictions once the aircraft leaves the SID/STAR lateral path. Without an assigned altitude, the aircraft's FMS may revert to leveling off at the altitude set by the pilot, which may be the SID/STAR 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 5–6–2, 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.

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 2–1–15 c.

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

PHRASEOLOGY–
UNABLE REQUESTED DEVIATION, FLY HEADING (heading), ADVISE CLEAR OF WEATHER

or

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

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

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

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

REFERENCE–
FAA Order JO 7110.65, Para 2–1–14, Coordinate Use Of Airspace
FAA Order JO 7110.65, Para 5–4–5, Transferring Controller Handoff
FAA Order JO 7110.65, Para 5–4–6, Receiving Controller Handoff
FAA Order JO 7110.65, Para 5–4–9, Prearranged Coordination
FAA Order JO 7110.65, Para 5–4–10, En Route Fourth Line Data Block Usage

k. En Route Fourth Line Data Transfer

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

REFERENCE–
FAA Order JO 7110.65, Para 5–4–10, En Route Fourth Line Data Block Usage

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

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

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

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

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

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

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

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

2–6–5. DISSEMINATING OFFICIAL WEATHER INFORMATION

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

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

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

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

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

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

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

4. The information is obtained from a FAA approved automation surface weather system.

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

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

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

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

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

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

b. Controllers outside of commissioned HIWAS areas must:

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

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

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

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

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

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

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

Section 9. Automatic Terminal Information Service Procedures

2–9–1. APPLICATION

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

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

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

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

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

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

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

2–9–2. OPERATING PROCEDURES

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

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

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

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

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

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

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

c. Controllers must ensure that pilots receive the most current pertinent information by taking the following actions, as applicable:

1. When a pilot does not state the appropriate ATIS code on initial contact, ask the pilot to confirm receipt of the current ATIS information.

EXAMPLE–
"Verify you have information CHARLIE."
"Information CHARLIE current. Advise when you have CHARLIE."

2. When a pilot is unable to receive the ATIS, issue the current weather, runway in use, approach/departure information, pertinent NOTAMs, and airport conditions.

EXAMPLE–
"Wind two five zero at one zero. Visibility one zero. Ceiling four thousand five hundred broken. Temperature three four. Dew point two eight. Altimeter three zero one zero. ILS–DME Runway Two Seven Approach in use. Departing Runway Two Two Right. Hazardous Weather Information for (geographical area) available on HIWAS or Flight Service Frequencies. Braking Action advisories are in effect."

d. Advise aircraft of changes to the ATIS code by broadcasting the change on all appropriate frequencies. The broadcast must include changes to pertinent operational information, when known, that necessitated the ATIS change.

EXAMPLE–
"Attention all aircraft, information ALPHA current."

"Attention all aircraft, information BRAVO current. MICROBURST advisories in effect."

"Attention all aircraft, information CHARLIE current. Numerous flocks of ducks in the immediate vicinity of (name) airport, altitude unknown."

REFERENCE–
FAA Order JO 7110.65, Para 2–9–3, Content

NOTE–
1. *No additional acknowledgement is required when a controller broadcasts information subsequent to the pilot's initial acknowledgement of the ATIS. Requiring each aircraft to acknowledge receipt of pertinent changes (broadcast) after initial confirmation of the ATIS could significantly impact workload.*

2. *Pertinent conditions are those that have a clear decisive relevance to the safety of air traffic. As noted in Paragraph 2–1–2, Duty Priority, there are many variables involved that make it virtually impossible to develop a standard list of changes that are classified as relevant to every conceivable situation. Each set of circumstances must be evaluated on its own merit, and when more than one action is required, controllers must exercise their best judgment based on the facts and circumstances known to them.*

2–9–3. CONTENT

a. Include the following in ATIS broadcast as appropriate:

1. Airport/facility name.

2. Phonetic letter code.

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

4. Weather information consisting of:

(a) Wind direction and velocity.

(b) Visibility.

(c) Obstructions to vision.

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

REFERENCE–
FAA Order JO 7900.5, Surface Weather Observing Table 3–2.

5. Instrument approach and runway in use.

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

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

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

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

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

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

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

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

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

REFERENCE–
FAA Order JO 7110.65, Para 10–2–14, Unauthorized Laser Illumination of Aircraft.
FAA Order JO 7210.3, Para 2–1–29, Reporting Unauthorized Laser Illumination of Aircraft.

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

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

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

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

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

REFERENCE–
FAA Order JO 7110.65, 2–1–23, Bird Activity Information.

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

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

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

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

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

i. Runway Condition Codes (RwyCC) when provided. Include the time of the report.

PHRASEOLOGY–
RUNWAY (number) condition codes (first value, second value, third value) AT (time),

EXAMPLE–
"Runway Two Seven, condition codes two, two, one at one zero one eight Zulu."

REFERENCE–
FAA Order JO 7110.65, Para 3–3–1, Landing Area Condition.

j. Runway Condition Codes "3/3/3" and the statement "Slippery When Wet."

EXAMPLE–
"Runway (number) condition codes three, three, three, Slippery When Wet at one two five five Zulu."

NOTE–
A Slippery When Wet FICON NOTAM indicates a runway has failed a friction survey, for example, due to excessive rubber build–up. Airport Operators will notify ATCT operational personnel of this concern and issue a FICON NOTAM prior to the expected arrival of rain. The FICON NOTAM will be cancelled when the rain has ended and the runway environment is determined to be dry by the Airport Operator.

k. Runway Condition codes "X/X/X." When a FICON NOTAM indicates these values, the statement "Runway Condition Codes Missing" must be included on the ATIS broadcast.

EXAMPLE–
"Runway (number) condition codes missing at one three four seven Zulu."

NOTE–
A FICON NOTAM may be generated with "X/X/X" instead of Runway Condition Codes. This will occur when the NOTAM user interface is not functioning correctly; however, a FICON NOTAM is still present.

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

m. When all 3 runway segments (touchdown, midpoint, and rollout) are reporting a code of 6, the Airport Operator will notify ATC that runway condition codes are no longer reportable.

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

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

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

increased requests from aircraft for read back of hold short instructions.

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

EXAMPLE–

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

Chapter 3. Airport Traffic Control– Terminal

Section 1. General

3–1–1. PROVIDE SERVICE

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

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

3–1–2. PREVENTIVE CONTROL

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

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

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

3–1–3. USE OF ACTIVE RUNWAYS

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

NOTE–
Exceptions may be authorized only as provided in 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/PERSONNEL NEAR/ON RUNWAYS

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

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

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

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

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

REFERENCE–
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.

REFERENCE–
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.

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 para 3–9–1, Departure Information, followed by the field boundary wind most appropriate to the aircraft operation.

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

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

NOTE–
The requirements for issuance of wind information remain valid as appropriate under this paragraph, 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.

c. Wind Shear Escape Procedures.

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

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

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

REFERENCE–
P/CG Term – Wind Shear Escape

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

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

(a) Departures:

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

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

(b) Arrivals:

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

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

NOTE–
When the escape procedure is complete, the flight crew

Section 7. Taxi and Ground Movement Procedures

3–7–1. GROUND TRAFFIC MOVEMENT

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

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

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

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

REFERENCE–
FAA Order JO 7110.65, Para 3–1–3, Use of Active Runways
FAA Order JO 7110.65, Para 3–7–2, Taxi and Ground Movement Operations

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3–7–2. TAXI AND GROUND MOVEMENT OPERATIONS

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

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

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

a. When authorizing an aircraft to taxi or a vehicle to proceed on the movement area, specify the taxi instructions/route. If it is the intent to hold the aircraft/vehicle short of:

1. A runway: issue the route up to the runway hold short point. When issuing a runway crossing clearance, include specific instructions on where to cross the runway;

2. Any other point along the route, issue:

(a) the route up to the hold short point, or

(b) the entire route and then state the hold short instructions.

After issuing a crossing clearance, specify the taxi instructions/route an aircraft/vehicle is to follow, if not previously issued.

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

PHRASEOLOGY–
HOLD POSITION.

HOLD FOR (reason)

CROSS (runway), at (runway/taxiway)

or

TAXI/CONTINUE TAXIING/PROCEED VIA (route),

or

ON (runway number or taxiways, etc.),

or

TO (location),

or

(direction),

or

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

or

VIA (route), HOLD SHORT OF (location)

or

FOLLOW (traffic) (restrictions as necessary)

or

BEHIND (traffic).

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

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

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

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

or

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

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

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

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

or

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

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

or

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

or

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

or

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

or

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

c. 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 Or-

der JO 7110.65, Para 3−10−10, Altitude Restricted Low Approach.

REFERENCE−
AIM, Runway Position Holding Markings, Para 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 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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

PHRASEOLOGY–
CONTINUE HOLDING,

or

TAXI OFF THE RUNWAY.

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

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

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

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

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

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

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

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

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

1. HOLD SHORT OF RUNWAY, *or*

2. HOLD IN POSITION.

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

PHRASEOLOGY–
CONTINUE HOLDING,

or

TAXI OFF THE RUNWAY.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3–9–5. ANTICIPATING SEPARATION

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

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

3–9–6. SAME RUNWAY SEPARATION

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

a. The other aircraft has departed and crossed the runway end or turned to avert any conflict. (See FIG 3–9–1.) If you can determine distances by

reference to suitable landmarks, the other aircraft needs only be airborne if the following minimum distance exists between aircraft: (See FIG 3–9–2.)

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

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

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

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

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

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

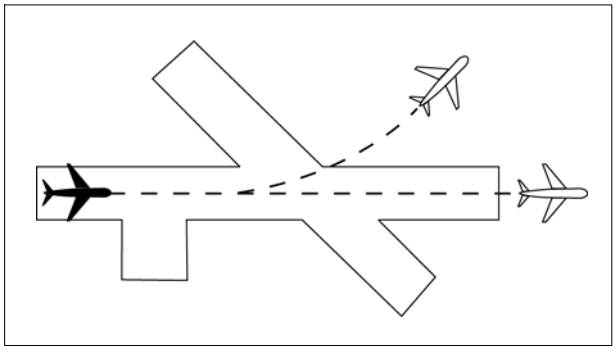
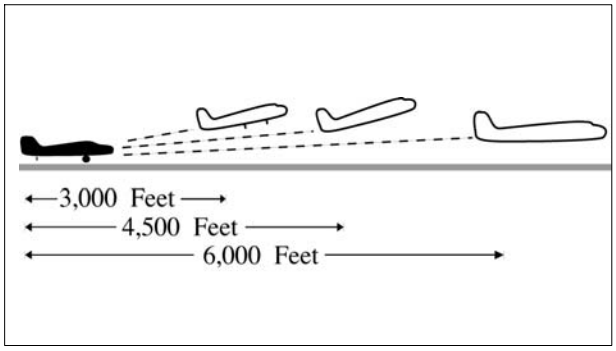


FIG 3–9–2
Same Runway Separation
[View 2]



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

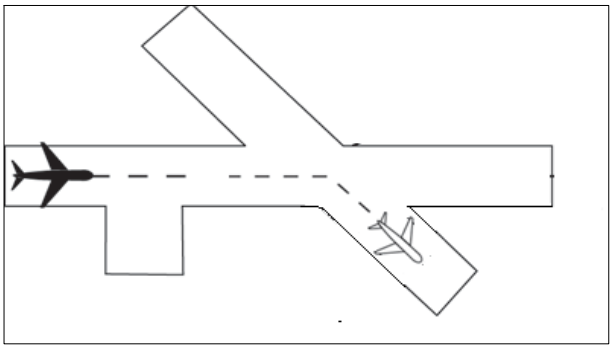
CATEGORY I – small single–engine propeller driven aircraft weighing 12,500 lbs. or less, and all helicopters.

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

CATEGORY III – all other aircraft.

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

FIG 3–9–3
Preceding Landing Aircraft Clear of Runway



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

WAKE TURBULENCE APPLICATION

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

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

REFERENCE–
AC 90–23, Aircraft Wake Turbulence.

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

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

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

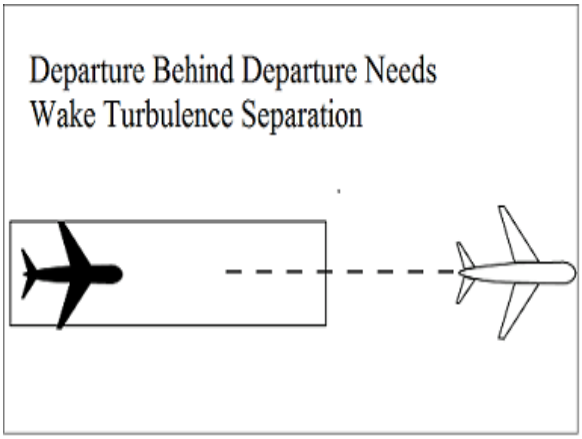
2. *Takeoff clearance to the following aircraft should not be issued until the time interval has passed after the preceding aircraft begins takeoff roll.*

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

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

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

FIG 3–9–4
Same Runway Separation



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

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

FIG 3–9–5
Same Runway Separation

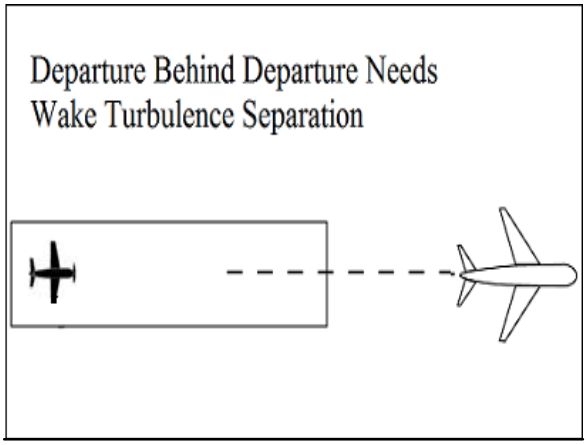
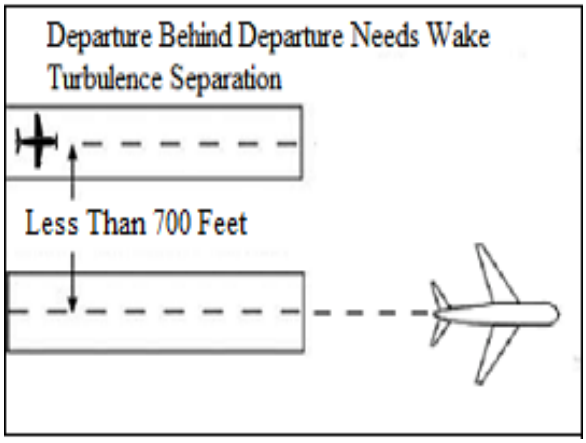


FIG 3–9–6
Parallel Runway Separated by Less than 700 Feet



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

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

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

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

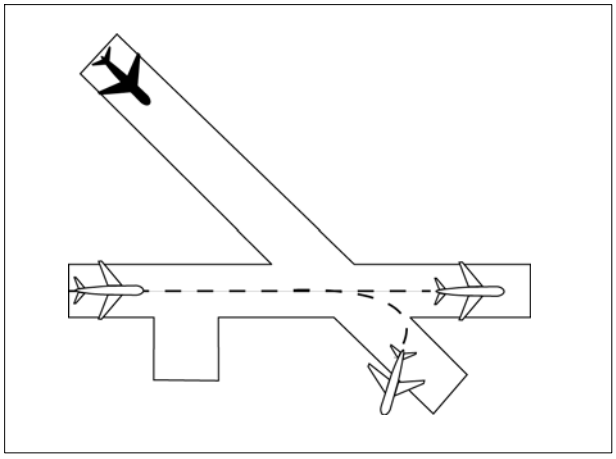
a. Issue traffic information to each aircraft operating on intersecting runways.

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

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

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

FIG 3–9–9
Intersecting Runway Separation



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

(a) Is clear of the landing runway, or

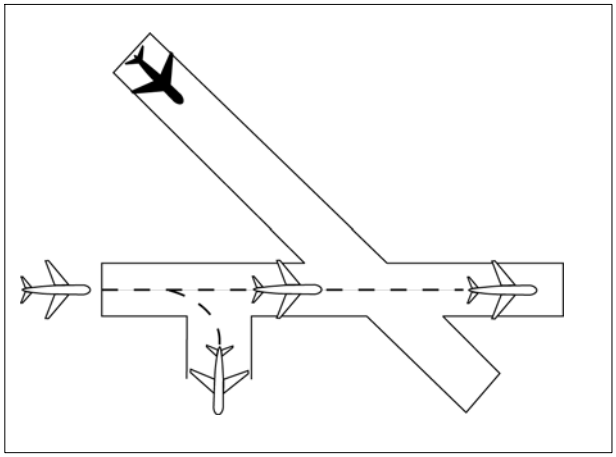
(b) Has completed the landing roll on the runway and will hold short of the intersection, or

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

(d) Has passed the intersection.

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

FIG 3–9–10
Intersecting Runway Separation



WAKE TURBULENCE APPLICATION

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

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

(a) Heavy, large, or small behind super – *3 minutes.*

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

(c) Small behind B757 – *2 minutes.*

FIG 3–9–11
Departure Behind Departure on Intersecting Runway

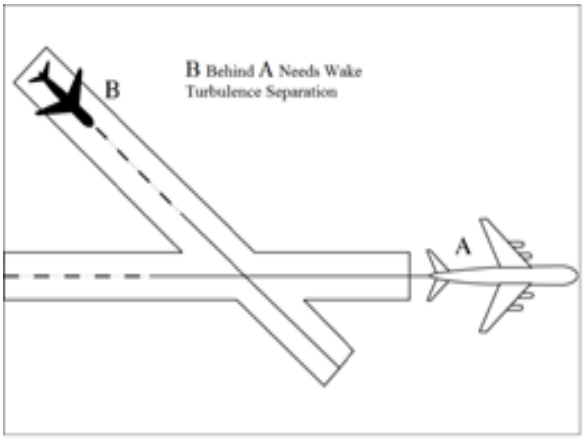
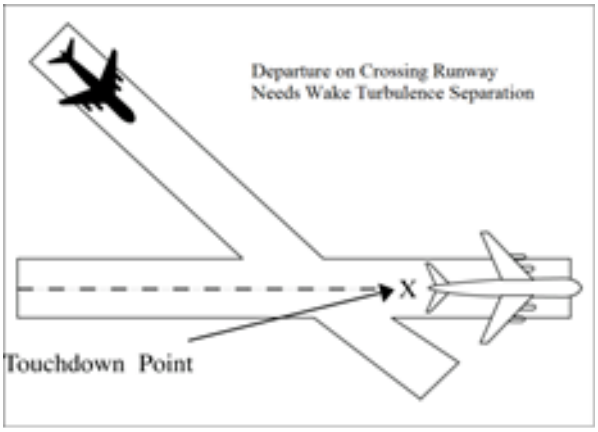


FIG 3–9–12
Departure Behind Arrival on Intersecting Runway



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

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

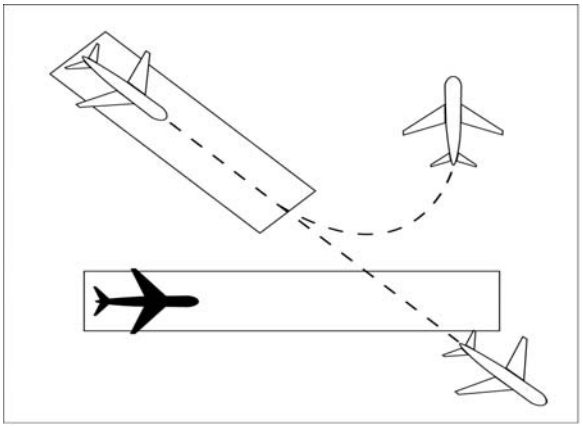
3–9–9. NONINTERSECTING CONVERGING RUNWAY OPERATIONS

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

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

1. The preceding aircraft has departed and crossed the departure runway, or is turning to avert any conflict. (See FIG 3–9–13).

FIG 3–9–13
Intersecting Runway Separation



2. A preceding arriving aircraft has completed the landing roll and will hold short of the projected intersection, passed the projected intersection, or has crossed over the departure runway (See FIG 3–9–14 and FIG 3–9–15).

FIG 3–9–14
Intersecting Runway Separation

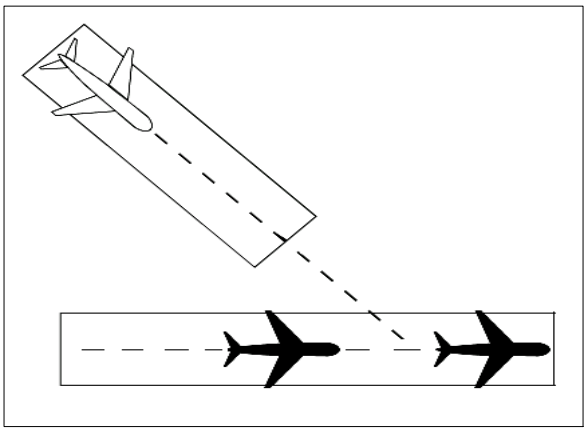
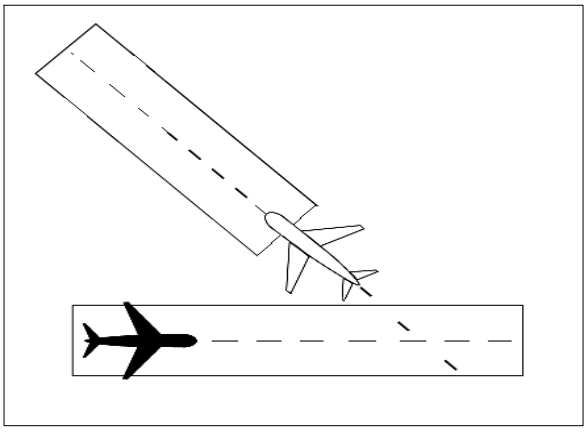


FIG 3–9–15
Intersecting Runway Separation



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

REFERENCE–
FAA Order JO 7210.3, Para 10-3-15, Go-Around/Missed Approach

FIG 3–9–16
Intersecting Runway Separation

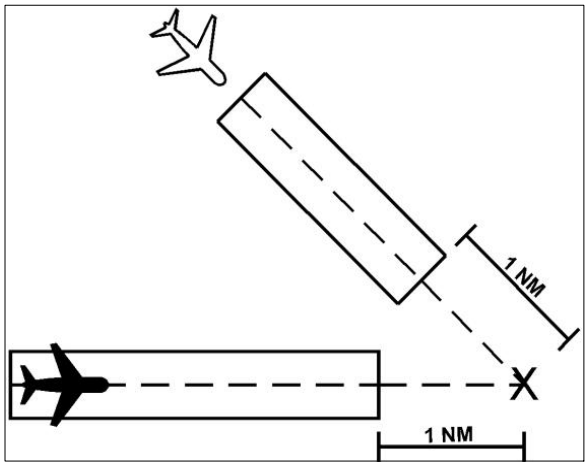
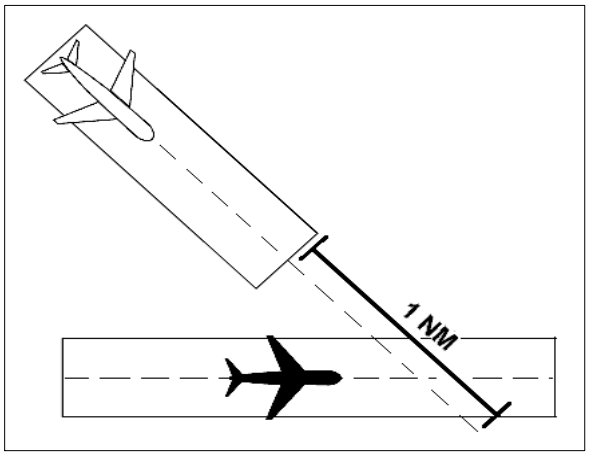


FIG 3–9–17
Intersecting Runway Separation



WAKE TURBULENCE APPLICATION

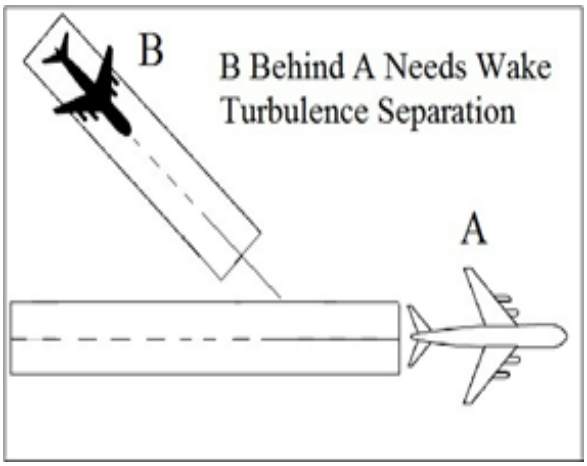
c. Separate aircraft taking off behind a departing aircraft on a crossing runway if projected flight paths will cross (See FIG 3–9–18):

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

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

3. Small behind B757 – *2 minutes.*

FIG 3–9–18
Intersecting Runway Separation



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

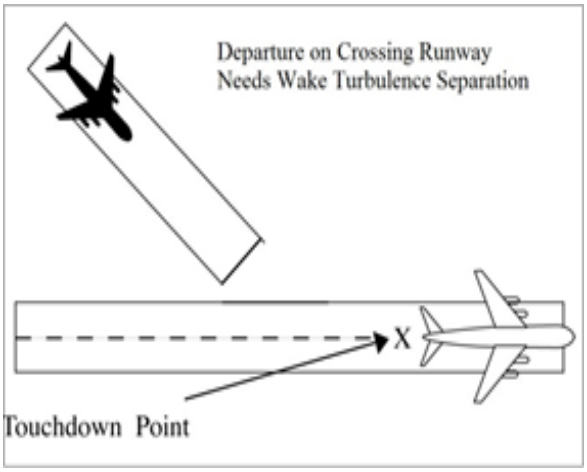
d. Separate aircraft departing behind a landing aircraft on a crossing runway if the departure will fly through the airborne path of the arrival (See FIG 3–9–19):

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

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

3. Small behind B757 – *2 minutes.*

FIG 3–9–19
Intersecting Runway Separation



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

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

3–9–10. TAKEOFF CLEARANCE

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

PHRASEOLOGY–
RUNWAY (number), CLEARED FOR TAKEOFF.

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

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

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

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

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

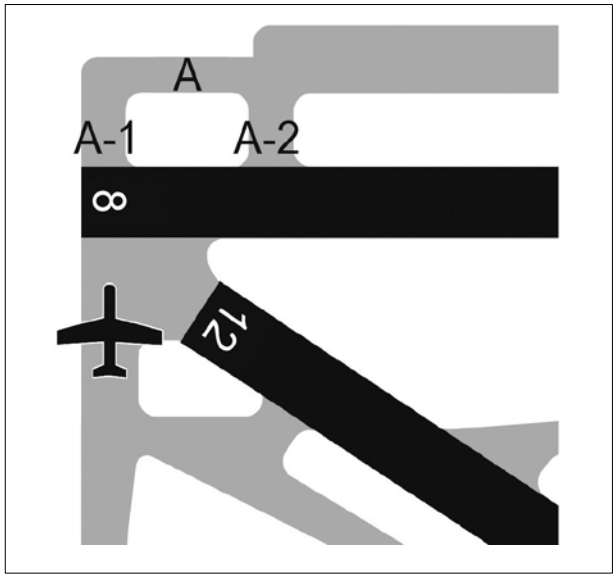
c. When two or more aircraft call the tower ready for departure, one or more at the full length of a runway and one or more at an intersection, state the location of the aircraft at the full length of the runway when clearing that aircraft for takeoff.

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

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

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

FIG 3–9–20
Runway/Taxiway Proximity

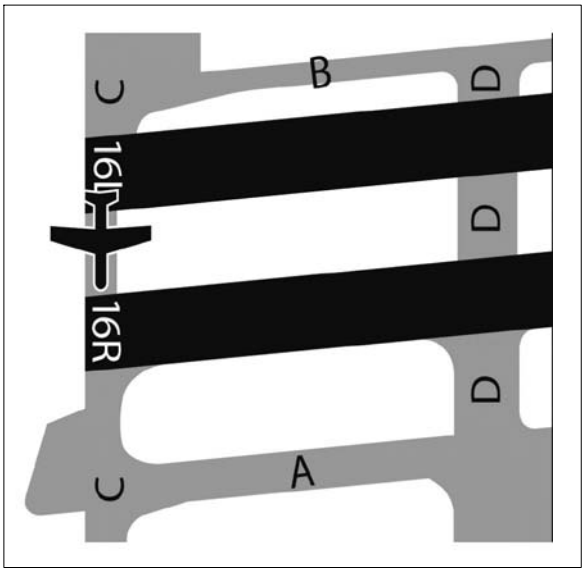


e. At those airports where the airport configuration does not allow for an aircraft to completely cross one runway and hold short of the departure runway and/or where airports do not have runway hold markings between runways, state the runway to be crossed with the takeoff clearance if the aircraft is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

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

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

FIG 3–9–21
Runway/Taxiway Proximity



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

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

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

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

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

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

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

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

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

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

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

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

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

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

3–9–11. CANCELLATION OF TAKEOFF CLEARANCE

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

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

PHRASEOLOGY–
CANCEL TAKEOFF CLEARANCE (reason).

listed in the current LAHSO directive, whose Available Landing Distance (ALD) does not exceed the landing distance requirement for the runway condition.

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

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

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

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

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

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

"Read back hold short instructions."

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

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

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

EXAMPLE–
"Five thousand fifty feet available."

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

6. Land and Hold Short runways must be free of any contamination as described in the current LAHSO directive, with no reports that braking action is less than good.

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

REFERENCE–
FAA Order JO 7110.65, Para 2–6–3, Reporting Weather Conditions

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

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

WAKE TURBULENCE APPLICATION

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

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

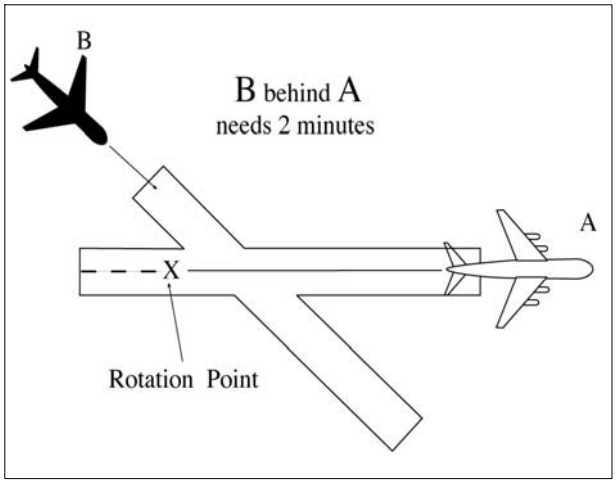
2. Heavy, large, or small behind heavy – *2 minutes.*

3. Small behind B757 – *2 minutes.*

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

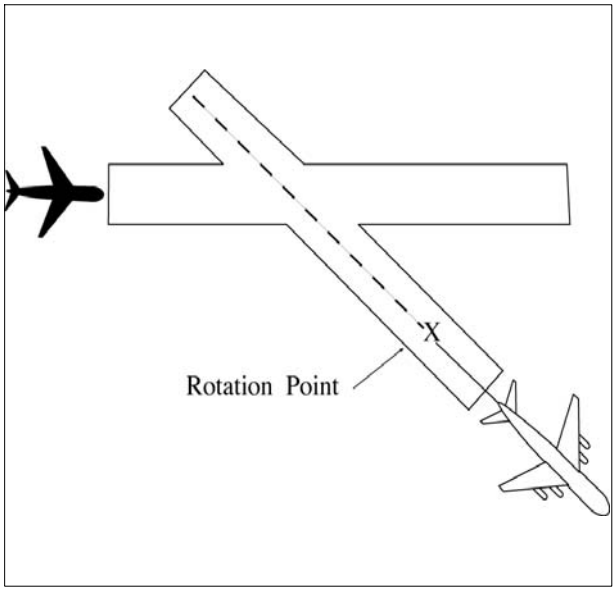
REFERENCE–
AC 90–23, Aircraft Wake Turbulence, Para 11, Pilot Responsibility.

FIG 3–10–10
Intersecting Runway Separation



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

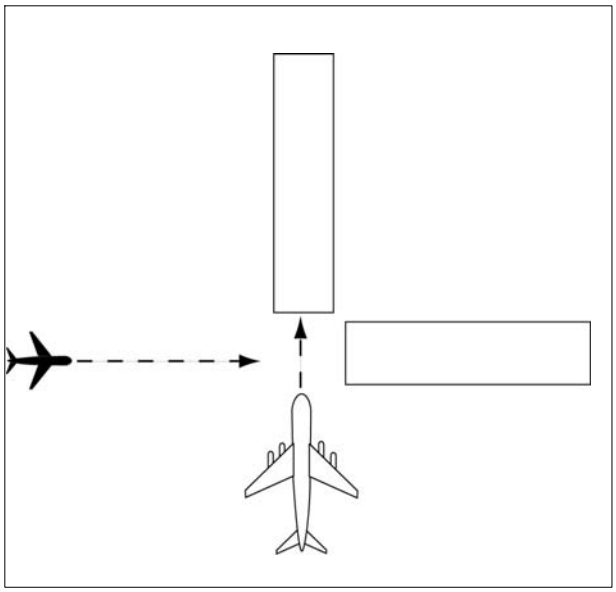
FIG 3−10−11
Intersecting Runway Separation



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

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

FIG 3−10−12
Intersecting Runway Separation



EXAMPLE−
"Runway niner cleared to land. Caution wake turbulence, Boeing Seven Fifty Seven landing runway three six."
REFERENCE−
FAA Order JO 7110.65, Para 7−4−4, Approaches to Multiple Runways.

3−10−5. LANDING CLEARANCE

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

PHRASEOLOGY−
RUNWAY (number) CLEARED TO LAND.

Or

CHANGE TO RUNWAY (number, RUNWAY (number) CLEARED TO LAND.

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

b. Procedures.

1. Facilities without a safety logic system or facilities with the safety logic system inoperative or in the limited configuration must not clear an aircraft for a full−stop, touch−and−go, stop−and−go, option,

or unrestricted low approach when a departing aircraft has been instructed to line up and wait or is holding in position on the same runway. The landing clearance may be issued once the aircraft in position has started takeoff roll.

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

c. Inform the closest aircraft that is requesting a full–stop, touch–and–go, stop–and–go, option, or unrestricted low approaches when there is traffic authorized to line up and wait on the same runway.

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

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

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

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

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

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

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

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

PHRASEOLOGY–
RUNWAY (number) SHORTENED, CLEARED TO LAND.

EXAMPLE–
"Runway Two-Seven shortened, cleared to land."

f. If landing clearance is temporarily withheld, insert the word "shortened" immediately after the runway number to advise the pilot to continue.

PHRASEOLOGY–
RUNWAY (number) SHORTENED, CONTINUE.

EXAMPLE–
"Runway Two-Seven shortened, continue."

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

3–10–6. ANTICIPATING SEPARATION

a. Landing clearance to succeeding aircraft in a landing sequence need not be withheld if you observe the positions of the aircraft and determine that prescribed runway separation will exist when the aircraft crosses the landing threshold. Issue traffic information to the succeeding aircraft if a preceding arrival has not been previously reported and when traffic will be departing prior to their arrival.

EXAMPLE–
"American Two Forty–Five, Runway One–Eight, cleared to land, number two following a United Seven–Thirty–Seven two mile final. Traffic will depart prior to your arrival."

"American Two Forty–Five, Runway One–Eight, cleared to land. Traffic will depart prior to your arrival."

NOTE–
Landing sequence number is optional at tower facilities where the arrival sequence to the runway is established by the approach control.

b. Anticipating separation must not be applied when conducting LUAW operations, except as authorized in paragraph 3–10–5b2. Issue applicable traffic information when using this provision.

EXAMPLE–
"American Two Forty–Five, Runway One–Eight, cleared to land. Traffic will be a Boeing Seven–Fifty–Seven holding in position."

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

3–10–7. LANDING CLEARANCE WITHOUT VISUAL OBSERVATION

When an arriving aircraft reports at a position where he/she should be seen but has not been visually observed, advise the aircraft as a part of the landing clearance that it is not in sight and restate the landing runway.

PHRASEOLOGY–
NOT IN SIGHT, RUNWAY (number) CLEARED TO LAND.

NOTE–
Aircraft observance on the CTRD satisfies the visually observed requirement.

3–10–8. WITHHOLDING LANDING CLEARANCE

Do not withhold a landing clearance indefinitely even though it appears a violation of Title 14 of the Code of Federal Regulations has been committed. The apparent violation might be the result of an emergency situation. In any event, assist the pilot to the extent possible.

3–10–9. RUNWAY EXITING

a. Instruct aircraft where to turn-off the runway after landing, when appropriate, and advise the aircraft to hold short of a runway or taxiway if required for traffic.

PHRASEOLOGY–
TURN LEFT/RIGHT (taxiway/runway),

or

IF ABLE, TURN LEFT/RIGHT (taxiway/runway)

and if required

HOLD SHORT OF (runway).

NOTE–
Runway exiting or taxi instructions should not normally be issued to an aircraft prior to, or immediately after, touchdown.

b. Taxi instructions must be provided to the aircraft by the local controller when:

1. Compliance with ATC instructions will be required before the aircraft can change to ground control, or

2. The aircraft will be required to enter an active runway in order to taxi clear of the landing runway.

EXAMPLE–
"U.S. Air Ten Forty Two, turn right next taxiway, cross runway two one, contact ground point seven."

"U.S. Air Ten Forty Two, turn right on Alfa/next taxiway, cross Bravo, hold short of Charlie, contact ground point seven."

NOTE–
1. *An aircraft is expected to taxi clear of the runway unless otherwise directed by ATC. Pilots must not exit the landing runway on to an intersecting runway unless authorized by ATC. In the absence of ATC instructions, an aircraft should taxi clear of the landing runway by clearing the hold position marking associated with the landing runway even if that requires the aircraft to protrude into or enter another taxiway/ramp area. This does not authorize an aircraft to cross a subsequent taxiway or ramp after clearing the landing runway.*

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

2. *The pilot is responsible for ascertaining when the aircraft is clear of the runway by clearing the runway holding position marking associated with the landing runway.*

c. Ground control and local control must protect a taxiway/runway/ramp intersection if an aircraft is required to enter that intersection to clear the landing runway.

REFERENCE–
FAA Order JO 7210.3, Para 10–1–7, Use of Active Runways.

d. Request a read back of runway hold short instructions when not received from the pilot.

EXAMPLE–
"American Four Ninety–two, turn left at Taxiway Charlie, hold short of Runway 27 Right."

or

"American Four Ninety–two, turn left at Charlie, hold short of Runway 27 Right."

"American Four Ninety Two, Roger."

"American Four Ninety–two, read back hold instructions."

NOTE–
Read back hold instructions phraseology may be initiated

for any point on a movement area when the controller believes the read back is necessary.

3–10–10. ALTITUDE RESTRICTED LOW APPROACH

A low approach with an altitude restriction of not less than 500 feet above the airport may be authorized except over an aircraft in takeoff position or a departure aircraft. Do not clear aircraft for restricted altitude low approaches over personnel unless airport authorities have advised these personnel that the approaches will be conducted. Advise the approaching aircraft of the location of applicable ground traffic, personnel, or equipment.

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

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

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

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

3–10–11. CLOSED TRAFFIC

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

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

or

UNABLE CLOSED TRAFFIC, (additional information as required).

NOTE–
Segregated traffic patterns for helicopters to runways and other areas may be established by letter of agreement or other local operating procedures.

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

3–10–12. OVERHEAD MANEUVER

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

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

PHRASEOLOGY–
PATTERN ALTITUDE (altitude). RIGHT TURNS.

b. Request for report on initial approach.

PHRASEOLOGY–
REPORT INITIAL.

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

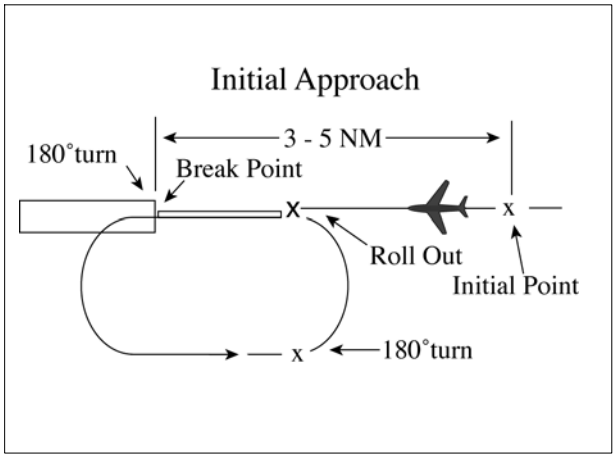
PHRASEOLOGY–
BREAK AT (specified point).

REPORT BREAK.

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

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

FIG 3–10–13
Overhead Maneuver



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

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

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

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

"Alfa Kilo Two Two, report break."

"Alfa Kilo Two Two, cleared to land."

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

3–10–13. SIMULATED FLAMEOUT (SFO) APPROACHES/EMERGENCY LANDING PATTERN (ELP) OPERATIONS/PRACTICE PRECAUTIONARY APPROACHES

a. Authorize military aircraft to make SFO/ELP/practice precautionary approaches if the following conditions are met:

1. A letter of agreement or local operating procedure is in effect between the military flying organization and affected ATC facility.

(a) Include specific coordination, execution, and approval procedures for the operation.

(b) The exchange or issuance of traffic information as agreed to in any interfacility letter of agreement is accomplished.

(c) Include a statement in the procedure that clarifies at which points SFOs/ELPs may/may not be terminated. (See FIG 3–10–14 and FIG 3–10–16.)

2. Traffic information regarding aircraft in radio communication with or visible to tower controllers which are operating within or adjacent to the flameout maneuvering area is provided to the SFO/ELP aircraft and other concerned aircraft.

3. The high-key altitude or practice precautionary approach maneuvering altitudes of the aircraft concerned are obtained prior to approving the approach. (See FIG 3–10–14 and FIG 3–10–16.)

NOTE–
1. *Practice precautionary/SFO/ELP approaches are authorized only for specific aircraft. Any aircraft, however, might make precautionary approaches, when engine failure is considered possible. The practice precautionary approach maneuvering area/altitudes may not conform to the standard SFO/ELP maneuvering area/altitudes.*

2. *SFO/ELP approaches generally require high descent rates. Visibility ahead and beneath the aircraft is greatly restricted.*

3. *Pattern adjustments for aircraft conducting SFOs and ELPs may impact the effectiveness of SFO and ELP training.*

REFERENCE–
FAA Order JO 7110.65, Para 4–8–12, Low Approach and Touch-and-Go.
FAA Order JO 7610.4, Para 9–3–7, Simulated Flameout (SFO)/Emergency Landing Pattern (ELP) Operations.

b. For overhead SFO/ELP approaches:

1. Request a report at the entry point.

PHRASEOLOGY–
REPORT (high or low) KEY (as appropriate).

2. Request a report at low key.

PHRASEOLOGY–
REPORT LOW KEY.

3. At low key, issue low approach clearance or alternate instructions.

REFERENCE–
FAA Order JO 7110.65, Para 3–8–1, Sequence/Spacing Application.
FAA Order JO 7110.65, Para 10–1–7, Inflight Emergencies Involving Military Fighter-type Aircraft.
FAA Order JO 7610.4, Para 9–3–7, Simulated Flameout (SFO)/Emergency Landing Pattern (ELP) Operations.

c. For straight–in simulation flameout approaches:

1. Request a position report from aircraft conducting straight–in SFO approaches.

PHRASEOLOGY–
REPORT (distance) MILE SIMULATED FLAMEOUT FINAL.

2. At the appropriate position on final (normally no closer than 3 miles), issue low approach clearance or alternate instruction. (See FIG 3–10–15.)

FIG 3–10–14
Simulated Flameout [1]

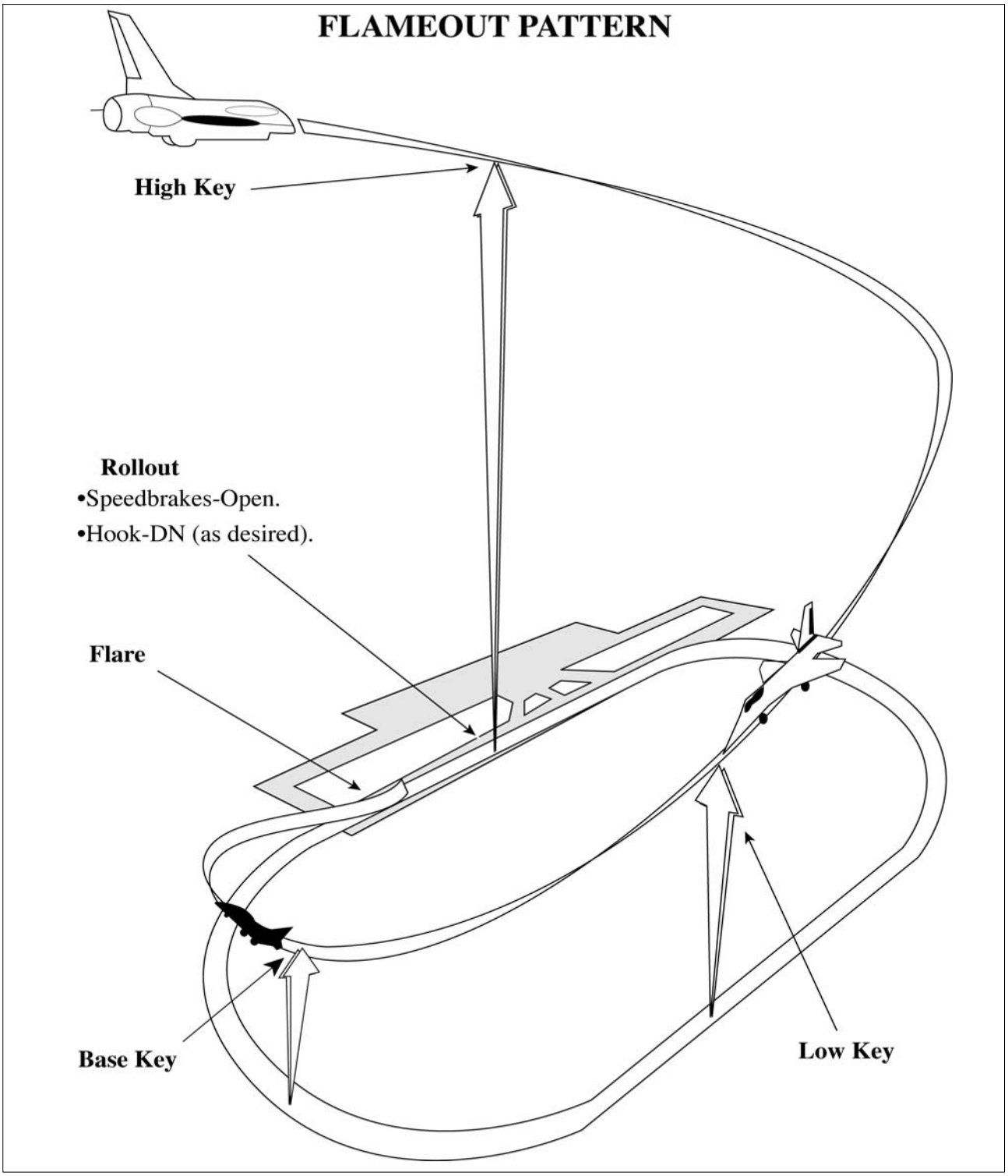


FIG 3–10–15
Simulated Flameout [2]

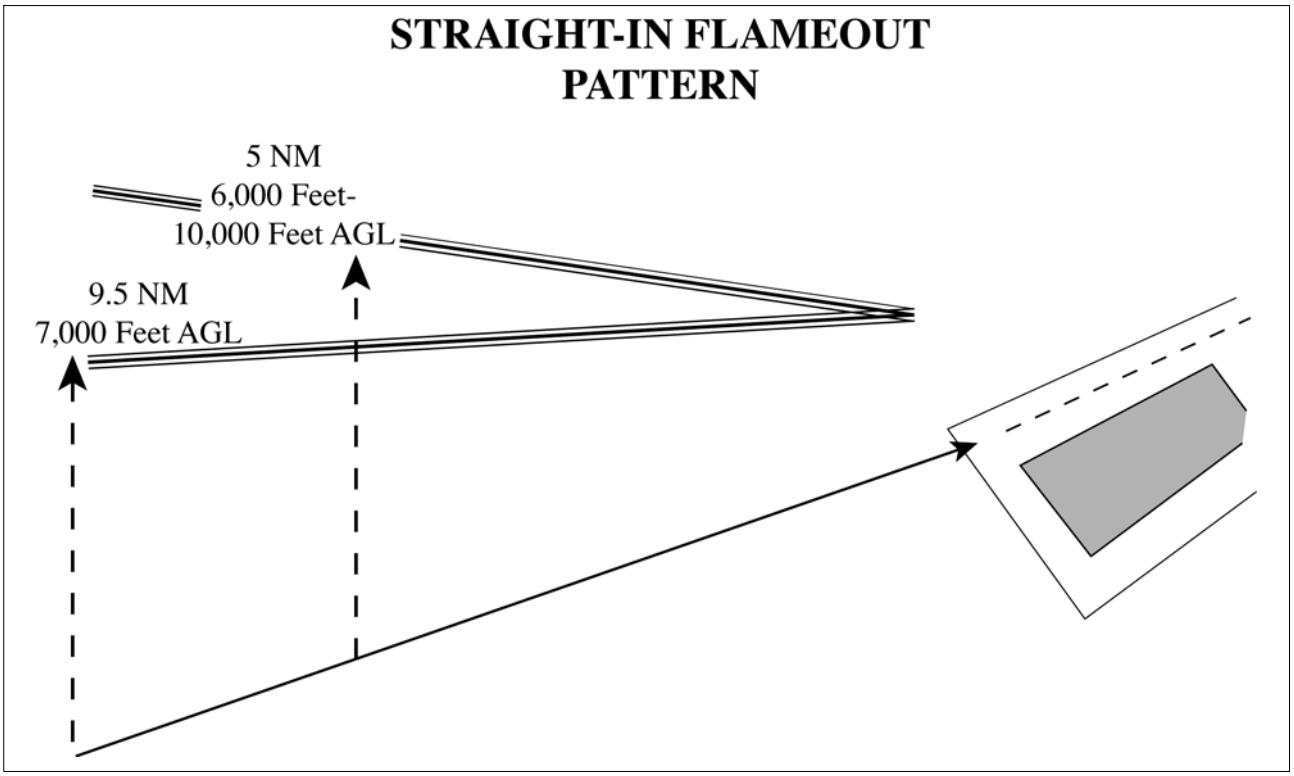
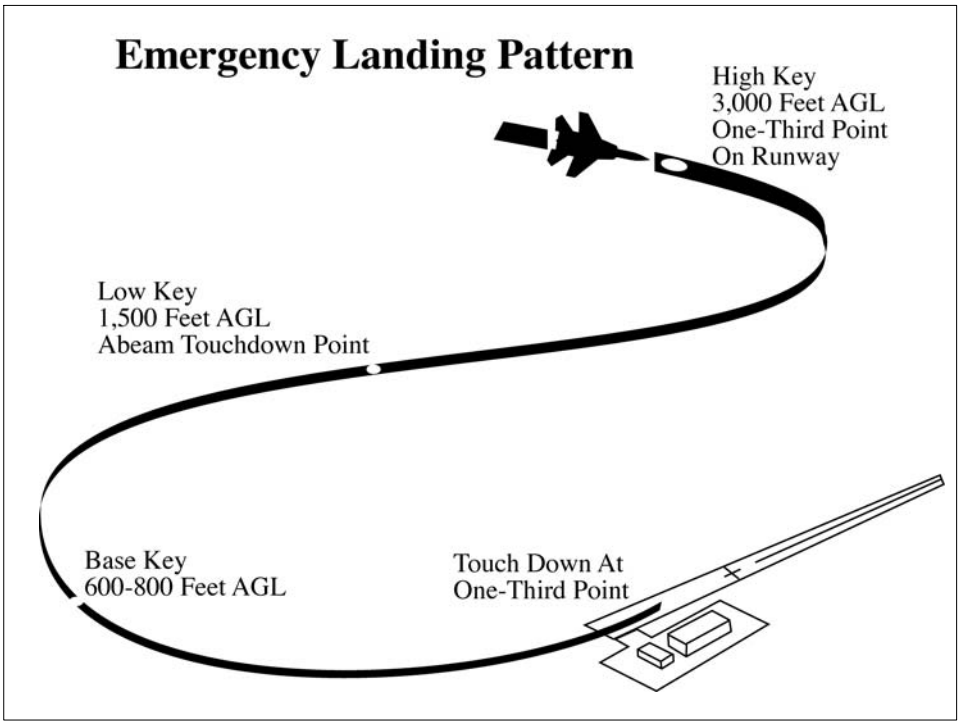


FIG 3–10–16
Emergency Landing Pattern



Section 2. Clearances

4–2–1. CLEARANCE ITEMS

Issue the following clearance items, as appropriate, in the order listed below:

a. Aircraft identification.

b. Clearance limit.

1. When the clearance limit is an airport, the word "airport" must follow the airport name.

PHRASEOLOGY–
CLEARED TO (destination) AIRPORT.

2. When the clearance limit is a NAVAID, and the NAVAID type is known, the type of NAVAID must follow the NAVAID name.

PHRASEOLOGY–
CLEARED TO (NAVAID name and type).

3. When the clearance limit is an intersection or waypoint, and the type is known, the type must follow the intersection or waypoint name.

PHRASEOLOGY–
CLEARED TO (intersection or waypoint name and type).

c. Standard Instrument Departure (SID).

d. Route of flight including PDR/PDAR/PAR when applied.

e. Altitude data in the order flown.

f. Mach number, if applicable.

g. *USAF.* When issuing a clearance to an airborne aircraft containing an altitude assignment, do not include more than one of the following in the same transmission:

1. Frequency change.

2. Transponder change.

3. Heading.

4. Altimeter setting.

5. Traffic information containing an altitude.

h. Holding instructions.

i. Any special information.

j. Frequency and beacon code information.

REFERENCE–
FAA Order JO 7110.65, Para 4–2–8, IFR–VFR and VFR–IFR Flights.
FAA Order JO 7110.65, Para 4–5–7, Altitude Information.

4–2–2. CLEARANCE PREFIX

a. Prefix a clearance, information, or a request for information which will be relayed to an aircraft through a non–ATC facility by stating "A–T–C clears," "A–T–C advises," or "A–T–C requests."

b. Flight service stations and ARTCC Flight Data Units must prefix a clearance with the appropriate phrase: "ATC clears," "ATC advises," etc.

4–2–3. DELIVERY INSTRUCTIONS

Issue specific clearance delivery instructions, if appropriate.

4–2–4. CLEARANCE RELAY

Relay clearances verbatim.

REFERENCE–
FAA Order JO 7110.65, Para 10–4–4, Communications Failure.

4–2–5. ROUTE OR ALTITUDE AMENDMENTS

a. Amend route of flight in a previously issued clearance by one of the following:

1. State which portion of the route is being amended and then state the amendment.

PHRASEOLOGY–
CHANGE (portion of route) TO READ (new portion of route).

2. State the amendment to the route and then state that the rest of the route is unchanged.

PHRASEOLOGY–
(Amendment to route), REST OF ROUTE UNCHANGED.

3. Issue a clearance "direct" to a point on the previously issued route.

PHRASEOLOGY–
CLEARED DIRECT (fix,waypoint).
Or
CLEARED DIRECT (destination) AIRPORT.

NOTE–
Clearances authorizing "direct" to a point on a previously issued route do not require the phrase "rest of route

unchanged." However, it must be understood where the previously cleared route is resumed. When necessary, "rest of route unchanged" may be used to clarify routing.

4. Issue the entire route by stating the amendment.

EXAMPLE–
(Cessna 21A has been cleared to the Airville Airport via V41 Delta VOR V174 Alfa VOR, direct Airville Airport, maintain 9000. After takeoff, the aircraft is rerouted via V41 Frank intersection, V71 Delta VOR, V174 Alfa VOR. The controller issues one of the following as an amended clearance):

1. *"Cessna Two One Alfa change Victor Forty–One Delta to read Victor Forty–One Frank, Victor Seventy–One Delta."*

2. *"Cessna Two One Alfa cleared via Victor Forty–One Frank, Victor Seventy–One Delta, rest of route unchanged."*

3. *"Cessna Two One Alfa cleared via Victor Forty–One Frank, Victor Seventy–One Delta, Victor One Seventy–Four Alfa V–O–R, direct Airville airport, maintain Niner Thousand."*

b. When route or altitude in a previously issued clearance is amended, restate all applicable altitude restrictions.

EXAMPLE–
1. *(A departing aircraft is cleared to cross Ollis intersection at or above 3,000; Gordonsville VOR at or above 12,000; maintain FL 200. Shortly after departure the altitude to be maintained is changed to FL 240. Because altitude restrictions remain in effect, the controller issues an amended clearance as follows):*

"Amend altitude. Cross Ollis intersection at or above Three Thousand; cross Gordonsville V–O–R at or above One Two Thousand; maintain Flight Level Two Four Zero."

(Shortly after departure, altitude restrictions are no longer applicable, the controller issues an amended clearance as follows):

"Climb and maintain Flight Level Two Four Zero."

2. *(An aircraft is cleared to climb via a SID with published altitude restrictions. Shortly after departure the top altitude is changed to FL 230 and compliance with the altitude restrictions is still required, the controller issues an amended clearance as follows):*

"Climb via SID except maintain Flight Level Two Three Zero."

NOTE–
1. *Restating previously issued altitude to "maintain" is an amended clearance. If altitude to "maintain" is changed or restated, whether prior to departure or while airborne and previously issued altitude restrictions are omitted, altitude restrictions are canceled, including SID/STAR altitude restrictions if any.*

2. *Crossing altitudes and speed restrictions on Obstacle Departure Procedure/s (ODP/s) cannot be canceled or amended by ATC.*

c. Issue an amended clearance if a speed restriction is declined because it cannot be complied with concurrently with a previously issued altitude restriction.

EXAMPLE–
(An aircraft is cleared to cross Gordonsville VOR at 11,000. Shortly thereafter he/she is cleared to reduce his/her airspeed to 300 knots. The pilot informs the controller he/she is unable to comply with both clearances simultaneously. The controller issues an amended clearance as follows):

"Cross Gordonsville VOR at One One Thousand. Then, reduce speed to Three Zero Zero."

NOTE–
The phrase "do the best you can" or comparable phrases are not valid substitutes for an amended clearance with altitude or speed restrictions.

REFERENCE–
FAA Order JO 7110.65, Para 2–1–18, Operational Requests.
FAA Order JO 7110.65, Section 6, Vectoring, Para 5–6–2, Methods.
FAA Order JO 7110.65, Section 7, Speed Adjustment, Para 5–7–2, Methods.

d. Air traffic control specialists should avoid route and/or altitude changes for aircraft participating in the North American Route Program (NRP) and that are displaying "NRP" in the remarks section of their flight plan. Specialists at facilities actively participating in the High Altitude Redesign (HAR) program should avoid route and/or altitude changes for aircraft participating in full HAR and high altitude Point–to–point (PTP), and that are displaying "HAR," or "PTP" in the remarks section of their flight plan.

NOTE–
Air traffic control specialists retain the latitude necessary to tactically resolve conflicts. Every effort should be made to ensure the aircraft is returned to the original filed flight plan/altitude as soon as conditions warrant.

REFERENCE–
FAA Order JO 7110.65, Para 2–1–4, Operational Priority.
FAA Order JO 7110.65, Para 2–2–15, North American Route Program (NRP) Information.
FAA Order JO 7110.65, Para 2–3–2, En Route Data Entries.
FAA Order JO 7210.3, Chapter 18, Section 17, North American Route Program.

4–2–6. THROUGH CLEARANCES

You may clear an aircraft through intermediate stops.

PHRASEOLOGY–
CLEARED THROUGH (airport) TO (fix).

4–2–7. ALTRV CLEARANCE

Use the phrase "via approved altitude reservation flight plan," if the aircraft will operate in an approved ALTRV.

PHRASEOLOGY–
VIA APPROVED ALTITUDE RESERVATION (mission name) FLIGHT PLAN.

NOTE–
An ALTRV normally includes the departure, climb, cruise, and arrival phases of flight up to and including holding pattern or point/time at which ATC provides separation between aircraft.

REFERENCE–
FAA Order JO 7110.65, Para 4–3–3, Abbreviated Departure Clearance.

4–2–8. IFR–VFR AND VFR–IFR FLIGHTS

a. Clear an aircraft planning IFR operations for the initial part of flight and VFR for the latter part to the fix at which the IFR part ends.

b. Treat an aircraft planning VFR for the initial part of flight and IFR for the latter part as a VFR departure. Issue a clearance to this aircraft when it requests IFR clearance approaching the fix where it proposes to start IFR operations. The phraseology CLEARED TO (destination) AIRPORT AS FILED may be used with abbreviated departure clearance procedures.

REFERENCE–
FAA Order JO 7110.65, Para 4–3–3, Abbreviated Departure Clearance.

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

d. When VFR aircraft operating below the minimum altitude for IFR operations requests an IFR clearance and the pilot informs you, or you are aware, that they are unable to climb in VFR conditions to the minimum IFR altitude:

1. Before issuing a clearance, ask if the pilot is able to maintain terrain and obstruction clearance during a climb to the minimum IFR altitude.

PHRASEOLOGY–
(Aircraft call sign), ARE YOU ABLE TO MAINTAIN YOUR OWN TERRAIN AND OBSTRUCTION CLEARANCE UNTIL REACHING (appropriate MVA/MIA/MEA/OROCA)

NOTE–
Pilots of pop–up aircraft are responsible for terrain and obstacle clearance until reaching minimum instrument altitude (MIA) or minimum en route altitude (MEA). Pilot compliance with an approved FAA procedure or an ATC instruction transfers that responsibility to the FAA; therefore, do not assign (or imply) specific course guidance that will (or could) be in effect below the MIA or MEA.

EXAMPLE–
"November Eight Seven Six, are you able to provide your own terrain and obstruction clearance between your present altitude and six thousand feet?"

2. If the pilot is able to maintain their own terrain and obstruction clearance, issue the appropriate IFR clearance as prescribed in Para 4–2–1, Clearance Items, and Para 4–5–6, Minimum En Route Altitudes.

3. If the pilot states that they are unable to maintain terrain and obstruction clearance, instruct the pilot to maintain VFR and to state intentions.

4. If appropriate, apply the provisions of Para 10–2–7, VFR Aircraft In Weather Difficulty, or Para 10–2–9, Radar Assistance Techniques, as necessary.

4–2–9. CLEARANCE ITEMS

The following guidelines must be utilized to facilitate the processing of airfile aircraft:

a. Ensure the aircraft is within your area of jurisdiction unless otherwise coordinated.

b. Obtain necessary information needed to provide IFR service.

c. Issue clearance to destination, short range clearance, or an instruction to the pilot to contact an FSS if the flight plan cannot be processed. If clearance is to destination airport, the phraseology CLEARED TO (destination) AIRPORT must be used. If clearance is to a NAVAID, state the name of

the NAVAID followed by the type of NAVAID, if the type is known. If clearance is to an intersection or waypoint and the type is known, the type must follow the intersection or waypoint name.

NOTE–
These procedures do not imply that the processing of airfiles has priority over another ATC duty to be performed.

REFERENCE–
FAA Order JO 7110.65, Para 2–2–1, Recording Information.

4–2–10. CANCELLATION OF IFR FLIGHT PLAN

a. If necessary, before instructing an IFR aircraft arriving at an airport not served by an air traffic control tower or flight service station to change to the common traffic advisory frequency, provide the pilot with instructions on how to cancel his/her IFR flight plan.

1. Airports with an air/ground communications station:

PHRASEOLOGY–
(Call sign) REPORT CANCELLATION OF IFR ON (frequency).

2. Airports without an air/ground communications station:

PHRASEOLOGY–
(Call sign) REPORT CANCELLATION OF IFR THIS FREQUENCY OR WITH FLIGHT SERVICE.
Or

(Call sign) REPORT CANCELLATION OF IFR THIS FREQUENCY OR WITH (FSS serving the area or the ATC controlling facility).

EXAMPLE–
"N13WA report cancellation of IFR this frequency or with McAlester Radio."

b. Respond to a pilot's cancellation of his/her IFR flight plan as follows:

PHRASEOLOGY–
(Call sign) IFR CANCELLATION RECEIVED.

Section 3. Departure Procedures

4–3–1. DEPARTURE TERMINOLOGY

Avoid using the term “takeoff” except to actually clear an aircraft for takeoff or to cancel a takeoff clearance. Use such terms as “depart,” “departure,” or “fly” in clearances when necessary.

REFERENCE–
FAA Order JO 7110.65, Para 3–9–9, Takeoff Clearance.
FAA Order JO 7110.65, Para 3–9–11, Cancellation of Takeoff Clearance.

4–3–2. DEPARTURE CLEARANCES

Include the following items in IFR departure clearances:

NOTE–
When considered necessary, controllers or pilots may initiate read backs of a clearance. Some pilots may be required by company rule to do so.

a. Always include the airport of departure when issuing a departure clearance for relay to an aircraft by an FSS, dispatcher, etc.

b. Clearance Limit.

1. Specify the destination airport when practicable, even though it is outside controlled airspace. Issue short range clearances as provided for in any procedures established for their use.

(a) When the clearance limit is an airport, the word “airport” must follow the airport name.

PHRASEOLOGY–
CLEARED TO (destination) AIRPORT

(b) When the clearance limit is a NAVAID and the NAVAID type is known, the type of NAVAID must follow the NAVAID name.

PHRASEOLOGY–
CLEARED TO (NAVAID name and type)

(c) When the clearance limit is an intersection or waypoint and the type is known, the type must follow the intersection or waypoint name.

PHRASEOLOGY–
CLEARED TO (intersection or waypoint name and type)

2. For Air Force One (AF1) operations, do not specify the destination airport.

NOTE–
Presidential detail is responsible for ensuring the accuracy of the destination airport.

PHRASEOLOGY–
DESTINATION AS FILED.

c. Departure Procedures.

1. Specify direction of takeoff/turn or initial heading to be flown after takeoff as follows:

(a) Locations with Airport Traffic Control Service–Specify direction of takeoff/turn or initial heading as necessary, consistent with published:

(1) Departure Procedures (DP). If an aircraft is vectored off a published Standard Instrument Departure (SID) or Obstacle Departure Procedure (ODP), that vector cancels the DP and ATC becomes responsible for separation from terrain and /or obstructions. IFR aircraft must be assigned an altitude.

(2) Diverse Vector Areas (DVA). The assignment of an initial heading using a DVA can be given to the pilot as part of the initial clearance, but must be given no later than with the takeoff clearance. Once airborne, an aircraft assigned headings within the DVA can be vectored below the MVA/MIA. Controllers cannot interrupt an aircraft’s climb in the DVA until the aircraft is at or above the MVA/MIA.

NOTE–
It is important for controllers to understand that there can be differences in published climb gradients applicable to individual departure procedures serving the same airport or runway. Assigning a different departure procedure without the pilot being able to re–brief may result in the pilot rejecting the new procedure.

REFERENCE–
AIM, Para 5–2–7. Departure Control.
AIM, Para 5–2–9. Instrument Departure Procedures (DP) – Obstacle Departure Procedures (ODP) and Standard Instrument Departures (SID).

(b) Locations without Airport Traffic Control Service, but within a Class E surface area – specify direction of takeoff/turn or initial heading if necessary. Obtain/solicit the pilot’s concurrence concerning a turn or heading before issuing them in a clearance.

NOTE–
Direction of takeoff and turn after takeoff can be obtained/solicited directly from the pilot, or relayed by an FSS, dispatcher, etc., as obtained/solicited from the pilot.

(c) At all other airports– Do not specify direction of takeoff/turn after takeoff. If necessary to specify an initial heading to be flown after takeoff, issue the initial heading so as to apply only within controlled airspace.

2. Where an obstacle departure procedure (ODP) has been published for a location and pilot compliance is necessary to ensure separation, include the procedure as part of the ATC clearance.

EXAMPLE–
"Depart via the (airport name)(runway number) departure procedure."
Or
"Depart via the (graphic ODP name) obstacle departure procedure."

NOTE–
Some aircraft are required by 14 CFR 91.175 to depart a runway under IFR using the ODP absent other instructions from ATC.

NOTE–
IFR takeoff minimums and obstacle departure procedures are prescribed for specific airports/runways and published in either a textual, or graphic form with the label (OBSTACLE) in the procedure title, and documented on an appropriate FAA Form 8260. To alert pilots of their existence, instrument approach procedure charts are annotated with a symbol:

3. Do not solicit use of the Visual Climb over Airport (VCOA) option.

NOTE–
Pilots will specifically advise ATC of their intent to use the VCOA option.

4. Compatibility with a procedure issued may be verified by asking the pilot if items obtained/solicited will allow him/her to comply with local traffic pattern, terrain, or obstruction avoidance.

PHRASEOLOGY–
FLY RUNWAY HEADING.

DEPART (direction or runway).

TURN LEFT/RIGHT.

WHEN ENTERING CONTROLLED AIRSPACE (instruction), FLY HEADING (degrees) UNTIL REACHING (altitude, point, or fix) BEFORE PROCEEDING ON COURSE.

FLY A (degree) BEARING/AZIMUTH FROM/TO (fix) UNTIL (time),

or

UNTIL REACHING (fix or altitude),

and if required,

BEFORE PROCEEDING ON COURSE.

EXAMPLE–
"Verify right turn after departure will allow compliance with local traffic pattern,"or "Verify this clearance will allow compliance with terrain or obstruction avoidance."

NOTE–
If a published IFR departure procedure is not included in an ATC clearance, compliance with such a procedure is the pilot's prerogative.

5. SIDs:

(a) Assign a SID (including transition if necessary). Assign a PDR or the route filed by the pilot, only when a SID is not established for the departure route to be flown, or the pilot has indicated that he/she does not wish to use a SID.

NOTE–
Departure procedure descriptive text contained within parentheses (for example, "Jimmy One (RNAV) Departure") is not included in departure clearance phraseology.

PHRASEOLOGY–
(SID name and number) DEPARTURE.

(SID name and number) DEPARTURE,
(transition name) TRANSITION.

EXAMPLE–
"Stroudsburg One Departure."
"Stroudsburg One Departure, Sparta Transition."

NOTE–
If a pilot does not wish to use a SID issued in an ATC clearance, or any other SID published for that location, he/she is expected to advise ATC.

(b) If it is necessary to assign a crossing altitude which differs from the SID altitude emphasize the change to the pilot.

PHRASEOLOGY–
(SID name and number) DEPARTURE, EXCEPT CROSS (revised altitude information).

EXAMPLE–
"Stroudsburg One Departure, except cross Quaker at

five thousand."

"Astoria Two Departure, except cross Astor waypoint at six thousand."

(c) Specify altitudes when they are not included in the SID.

PHRASEOLOGY–
(SID name and number) DEPARTURE. CROSS (fix) AT (altitude).

EXAMPLE–
"Stroudsburg One Departure. Cross Jersey intersection at four thousand. Cross Range intersection at six thousand."

"Engle Two departure. Cross Pilim waypoint at or above five thousand. Cross Engle waypoint at or above seven thousand. Cross Gorge waypoint at niner thousand."

d. Route of flight. Specify one or more of the following:

1. Airway, route, course, heading, azimuth, arc, or vector.

2. The routing a pilot can expect if any part of the route beyond a short range clearance limit differs from that filed.

PHRASEOLOGY–
EXPECT FURTHER CLEARANCE VIA (airways, routes, or fixes.)

e. Altitude. Use one of the following in the order of preference listed.

NOTE–
Turbojet aircraft equipped with afterburner engines may occasionally be expected to use afterburning during their climb to the en route altitude. When so advised by the pilot, the controller may be able to plan his/her traffic to accommodate the high performance climb and allow the pilot to climb to his/her planned altitude without restriction.

REFERENCE–
PCG, Climb Via, Top Altitude

1. To the maximum extent possible, Air Force One will be cleared unrestricted climb to:

(a) 9,000' AGL or higher.

(b) If unable 9,000' AGL or higher, then the highest available altitude below 9,000' AGL.

2. Assign the altitude requested by the pilot.

3. Assign an altitude, as near as possible to the altitude requested by the pilot, and

(a) Inform the pilot when to expect clearance to the requested altitude unless instructions are contained in the specified SID, or

(b) If the requested altitude is not expected to be available, inform the pilot what altitude can be expected and when/where to expect it.

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

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

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

EXAMPLE–
"Cleared to Johnston Airport, Scott One departure, Jonez transition, Q One Forty–five. Climb via SID."

"Cleared to Johnston Airport, Scott One departure, Jonez transition, Q One Forty–five, Climb via SID except maintain flight level one eight zero."

"Cleared to Johnston Airport, Scott One departure, Jonez transition, Q One Forty–five, Climb Via SID except maintain flight level one eight zero, expect flight level three five zero one zero minutes after departure."

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

2. *Considering the principle that the last ATC clearance issued has precedence over the previous, the phraseology "maintain (altitude)" alone cancels previously issued altitude restrictions, including SID/STAR altitude restrictions, unless they are restated or modified.*

REFERENCE–
FAA Order JO 7110.65, Para 4–2–5, Route or Altitude Amendments
AIM 4–4–10 Adherence to Clearance.

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

NOTE–
1. *14 CFR Section 91.185, says that in the event of a two-way radio communication failure, in VFR conditions or if VFR conditions are encountered after the failure, the pilot must continue the flight under VFR and land as soon as practicable. That section also says that when the failure occurs in IFR conditions the pilot must continue flight at*

the highest of the following altitudes or flight levels for the route segment being flown:

a. *The altitude or flight level assigned in the last ATC clearance received.*

b. *The minimum altitude (converted, if appropriate, to minimum flight level as prescribed in 14 CFR Section 91.121(c)) for IFR operations. (This altitude should be consistent with MEAs, MOCAs, etc.)*

c. *The altitude or flight level ATC has advised may be expected in a further clearance.*

2. *If the expected altitude is the highest of the preceding choices, the pilot should begin to climb to that expected altitude at the time or fix specified in the clearance. The choice to climb to the expected altitude is not applicable if the pilot has proceeded beyond the specified fix or if the time designated in the clearance has expired.*

PHRASEOLOGY–

CLIMB AND MAINTAIN (the altitude as near as possible to the pilot's requested altitude). EXPECT (the requested altitude or an altitude different from the requested altitude) AT (time or fix),

and if applicable,

(pilot's requested altitude) IS NOT AVAILABLE.

EXAMPLE–

1. *A pilot has requested flight level 350. Flight level 230 is immediately available and flight level 350 will be available at the Appleton zero five zero radial 35 mile fix. The clearance will read:*

"Climb and maintain flight level two three zero. Expect flight level three five zero at Appleton zero five zero radial three five mile fix."

2. *A pilot has requested 9,000 feet. An altitude restriction is required because of facility procedures or requirements. Assign the altitude and advise the pilot at what fix/time the pilot may expect the requested altitude. The clearance could read:*

"Climb and maintain five thousand. Expect niner thousand one zero minutes after departure."

3. *A pilot has requested 17,000 feet which is unavailable. You plan 15,000 feet to be the pilot's highest altitude prior to descent to the pilot's destination but only 13,000 feet is available until San Jose VOR. Advise the pilot of the expected altitude change and at what fix/time to expect clearance to 15,000 feet. The clearance will read: "Climb and maintain one three thousand. Expect one five thousand at San Jose. One seven thousand is not available."*

REFERENCE–

FAA Order JO 7110.65, Para 4–3–3, Abbreviated Departure Clearance.
FAA Order JO 7110.65, Para 5–8–2, Initial Heading.
FAA Order JO 7110.65 Para 4-2-5 Route or Altitude Amendments.
AIM 4-4-10 Adherence to Clearance.

4–3–3. ABBREVIATED DEPARTURE CLEARANCE

a. Issue an abbreviated departure clearance if its use reduces verbiage and the following conditions are met:

REFERENCE–

FAA Order JO 7110.65, Para 4–2–8, IFR-VFR and VFR-IFR Flights.

1. The route of flight filed with ATC has not been changed by the pilot, company, operations officer, input operator, or in the stored flight plan program prior to departure.

NOTE–

A pilot will not accept an abbreviated clearance if the route of flight filed with ATC has been changed by him/her or the company or the operations officer before departure. He/she is expected to inform the control facility on initial radio contact if he/she cannot accept the clearance. It is the responsibility of the company or operations officer to inform the pilot when they make a change.

2. All ATC facilities concerned have sufficient route of flight information to exercise their control responsibilities.

NOTE–

The route of flight information to be provided may be covered in letters of agreement.

3. When the flight will depart IFR, destination airport information is relayed between the facilities concerned prior to departure.

EXAMPLE–

1. *A tower or flight service station relay of destination airport information to the center when requesting clearance:*

"Request clearance for United Four Sixty-One to O'Hare."

2. *A center relay to the tower or flight service station when initiating a clearance:*

"Clearance for United Four Sixty-One to O'Hare."

NOTE–

Pilots are expected to furnish the facility concerned with destination airport information on initial radio call-up. This will provide the information necessary for detecting any destination airport differences on facility relay.

4. The assigned altitude, according to the provisions in Para 4–3–2, Departure Clearances, subparagraph e, is stated in the clearance.

b. If it is necessary to modify a filed route of flight in order to achieve computer acceptance due, for example, to incorrect fix or airway identification, the contraction "FRC," meaning "Full Route Clearance

Necessary," or "FRC/(fix)," will be added to the remarks. "FRC" or "FRC/(fix)" must always be the first item of intra-center remarks. When "FRC" or "FRC/(fix)" appears on a flight progress strip, the controller issuing the ATC clearance to the aircraft must issue a full route clearance to the specified fix, or, if no fix is specified, for the entire route.

EXAMPLE–
"Cleared to Missoula International Airport, Chief Two Departure to Angley; direct Salina; then as filed; maintain one seven thousand."

NOTE–
Changes, such as those made to conform with traffic flows and preferred routings, are only permitted to be made by the pilot (or his/her operations office) or the controller responsible for initiating the clearance to the aircraft.

c. Specify the destination airport in the clearance.

d. When no changes are required in the filed route, state the phrase: "Cleared to (destination) airport, ([SID name and number] and SID transition, as appropriate); then, as filed." If a SID is not assigned, follow with "As filed." If required, add any additional instructions or information, including requested altitude if different than assigned.

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

1. Instruct aircraft to "Climb via SID."

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

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

f. Instruct aircraft to MAINTAIN (altitude) when:

1. No SID is assigned.

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

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

PHRASEOLOGY–
CLEARED TO (destination) AIRPORT;

and as appropriate,

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

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

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

Or when a SID contains published crossing restrictions,

CLIMB VIA SID.

CLIMB VIA SID EXCEPT MAINTAIN (altitude); (additional instructions or information).

If a SID is not assigned,

CLEARED TO (destination) AIRPORT AS FILED.
MAINTAIN (altitude);

and if required,

(additional instructions or information).

EXAMPLE–
"Cleared to Reynolds Airport; David Two Departure, Kingham Transition; then, as filed. Maintain niner thousand. Expect flight level four one zero, one zero minutes after departure."

"Cleared to Reynolds Airport; David Two Departure, Kingham Transition; then, as filed. Climb via SID."

"Cleared to Reynolds Airport; David Two Departure, Kingham Transition; then, as filed. Climb via SID except maintain flight level two four zero. Expect flight level four one zero, one zero minutes after departure.

"Cleared to Reynolds Airport as filed. Maintain niner thousand. Expect flight level four one zero, one zero minutes after departure."

NOTE–
1. *SIDs are excluded from "cleared as filed" procedures.*

2. *If a pilot does not wish to accept an ATC clearance to fly a SID, he/she is expected to advise ATC or state "NO SID" in his/her flight plan remarks.*

REFERENCE–
PCG, Climb Via, Top Altitude

g. When a filed route will require revisions, the controller responsible for initiating the clearance to the aircraft must either:

1. Issue a FRC/FRC until a fix.

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

PHRASEOLOGY–
CLEARED TO (destination) AIRPORT.

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

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

Or when the SID contains published crossing restrictions,

CLIMB VIA SID

CLIMB VIA SID EXCEPT MAINTAIN (altitude).
and if required,

(additional instructions or information).

If a SID is not assigned,

CLEARED TO (destination) AIRPORT AS FILED, EXCEPT CHANGE ROUTE TO READ (amended route portion). MAINTAIN (altitude);

and if required,

(additional instructions or information).

EXAMPLE–
"Cleared to Reynolds Airport; South Boston One Departure; then, as filed, except change route to read South Boston Victor Twenty Greensboro. Maintain eight thousand, report leaving four thousand."

"Cleared to Reynolds Airport; South Boston One Departure; then, as filed, except change route to read South Boston Victor Twenty Greensboro; climb via SID."

"Cleared to Reynolds Airport; South Boston One Departure; then, as filed, except change route to read South Boston Victor Twenty Greensboro; climb via SID except maintain flight level one eight zero, expect flight level three one zero one zero minutes after departure."

"Cleared to Reynolds Airport as filed, except change route to read South Boston Victor Twenty Greensboro. Maintain eight thousand, report leaving four thousand."

"Cleared to Reynolds Airport via Victor Ninety-one Albany, then as filed. Maintain six thousand."

h. In a nonradar environment specify one, two, or more fixes, as necessary, to identify the initial route of flight.

1. Specify the destination airport, when practicable, followed by the word "airport" even though it is outside controlled airspace.

PHRASEOLOGY–
CLEARED TO (destination) AIRPORT

2. When the clearance limit is a NAVAID, the type of NAVAID must follow the NAVAID name.

PHRASEOLOGY–
CLEARED TO (NAVAID name and type)

3. When the clearance limit is an intersection or waypoint and the type is known, the type must follow the intersection or waypoint name.

PHRASEOLOGY–
CLEARED TO (intersection or waypoint name and type)

EXAMPLE–
The filed route of flight is from Hutchins V10 Emporia, thence V10N and V77 to St. Joseph. The clearance will read:
"Cleared to Watson Airport as filed via Emporia, maintain Seven Thousand."

i. Do not apply these procedures when a pilot requests a detailed clearance or to military operations conducted within ALTRV, stereo routes, operations above FL 600, and other military operations requiring special handling.

NOTE–
Departure clearance procedures and phraseology for military operations within approved altitude reservations, military operations above FL 600, and other military operations requiring special handling are contained in separate procedures in this order or in a LOA, as appropriate.

REFERENCE–
FAA Order JO 7110.65, Para 4–2–7, ALTRV Clearance.
FAA Order JO 7110.65, Para 9–2–15, Military Operations Above FL 600.

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

Assign departure restrictions, clearance void times, hold for release, or release times when necessary to separate departures from other traffic or to restrict or regulate the departure flow.

REFERENCE–
FAA Order JO 7110.65, Para 10–3–1, Overdue Aircraft.
FAA Order JO 7110.65, Para 10–4–1, Traffic Restrictions.
FAA Order JO 7110.65, Para 10–4–3, Traffic Resumption.

a. Clearance Void Times.

1. When issuing clearance void times at airports not served by control towers, provide alternative instructions requiring the pilots to advise ATC of their intentions no later than 30 minutes after the clearance void time if not airborne.

2. The facility delivering a clearance void time to a pilot must issue a time check. A void time issued using a specified number of minutes does not require a time check.

PHRASEOLOGY–
CLEARANCE VOID IF NOT OFF BY (clearance void time),

and if required,

IF NOT OFF BY (clearance void time), ADVISE (facility) NOT LATER THAN (time) OF INTENTIONS.

TIME (time in hours, minutes, and the nearest quarter minute).

or

CLEARANCE VOID IF NOT OFF IN (number of minutes) MINUTES

and if required,

IF NOT OFF IN (number of minutes) MINUTES, ADVISE (facility) OF INTENTIONS WITHIN (number of minutes) MINUTES.

b. Hold For Release (HFR).

1. "Hold for release" instructions must be used when necessary to inform a pilot or a controller that a departure clearance is not valid until additional instructions are received.

REFERENCE–
P/CG Term– Hold for Release.

2. When issuing hold for release instructions, include departure delay information.

PHRASEOLOGY–
(Aircraft identification) CLEARED TO (destination) AIRPORT AS FILED, MAINTAIN (altitude),

and if required,

(additional instructions or information).

HOLD FOR RELEASE, EXPECT (time in hours and/or minutes) DEPARTURE DELAY.

3. When conditions allow, release the aircraft as soon as possible.

PHRASEOLOGY–
To another controller,

(aircraft identification) RELEASED.

To a flight service specialist, or Flight Data Communication Specialist (FDCS)

ADVISE (aircraft identification) RELEASED FOR DEPARTURE.

To a pilot at an airport not served by a control tower,

(aircraft identification) RELEASED FOR DEPARTURE.

c. Release Times.

1. Release times must be issued to pilots when necessary to specify the earliest time an aircraft may depart.

NOTE–
A release time is a departure restriction issued to a pilot (either directly or through authorized relay) to separate a departing aircraft from other traffic.

2. The facility issuing a release time to a pilot must issue a time check. A release time using a specified number of minutes does not require a time check.

PHRASEOLOGY–
(Aircraft identification) RELEASED FOR DEPARTURE AT (time in hours and/or minutes),

and if required,

IF NOT OFF BY (time), ADVISE (facility) NOT LATER THAN (time) OF INTENTIONS.

TIME (time in hours, minutes, and nearest quarter minute).

(Aircraft identification) RELEASED FOR DEPARTURE

IN (number of minutes) MINUTES

and if required,

IF NOT OFF IN (number of minutes) MINUTES, ADVISE (facility) OF INTENTIONS WITHIN (number of minutes) MINUTES.

d. When expect departure clearance times (EDCT) are assigned through traffic management programs, excluding overriding call for release (CFR) operations as described in subparagraph e, the departure terminal must, to the extent possible, plan ground movement of aircraft destined to the affected airport(s) so that flights are sequenced to depart no earlier than 5 minutes before, and no later than 5 minutes after the EDCT. Do not release aircraft on their assigned EDCT if a ground stop (GS) applicable to that aircraft is in effect, unless approval has been received from the originator of the GS.

e. Call for Release (CFR). When CFR is in effect, release aircraft so they are airborne within a window that extends from 2 minutes prior and ends 1 minute after the assigned time, unless otherwise coordinated.

NOTE–
1. *Subparagraph (e) applies to all facilities.*

2. *Coordination may be verbal, electronic, or written.*

1. If an aircraft has begun to taxi or requests taxi in a manner consistent with meeting the EDCT, the aircraft must be released. Additional coordination is not required.

2. If an aircraft requests taxi or clearance for departure inconsistent with meeting the EDCT window, ask the pilot to verify the EDCT.

(a) If the pilot's EDCT is the same as the FAA EDCT, the aircraft is released consistent with the EDCT.

(b) If the pilot's EDCT is not the same as the FAA EDCT, refer to Trust and Verify Note below.

3. If an aircraft requests taxi too late to meet the EDCT, contact the ATCSCC through the appropriate TMU.

NOTE–
(Trust & Verify) EDCTs are revised by Air Carriers and Traffic Management for changing conditions en route or at affected airport(s). Terminal controllers' use of aircraft reported EDCT for departure sequencing should be verified with the appropriate TMU prior to departure if this can be accomplished without the aircraft incurring delay beyond the EDCT reported by the aircraft. The preferred method for verification is the Flight Schedule Monitor (FSM). If the EDCT cannot be verified without incurring additional delay, the aircraft should be released based on the pilot reported EDCT. The aircraft operator is responsible for operating in a manner consistent to meet the EDCT.

4–3–5. GROUND STOP

Do not release an aircraft if a ground stop (GS) applicable to that aircraft is in effect, without the approval of the originator of the GS.

4–3–6. DELAY SEQUENCING

When aircraft elect to take delay on the ground before departure, issue departure clearances to them in the order in which the requests for clearance were originally made if practicable.

4–3–7. FORWARD DEPARTURE DELAY INFORMATION

Inform approach control facilities and/or towers of anticipated departure delays.

4–3–8. COORDINATION WITH RECEIVING FACILITY

a. Coordinate with the receiving facility before the departure of an aircraft if the departure point is less than 15 minutes flying time from the transferring facility's boundary unless an automatic transfer of data between automated systems will occur, in which case, the flying time requirement may be reduced to 5 minutes or replaced with a mileage from the boundary parameter when mutually agreeable to both facilities.

NOTE–
Agreements requiring additional time are encouraged between facilities that need earlier coordination. However, when agreements establish mandatory radar handoff procedures, coordination needs only be effected in a timely manner prior to transfer of control.

REFERENCE–
FAA Order JO 7110.65, Chapter 5, Section 4, Transfer of Radar Identification, Para 5–4–1, Application.

b. The actual departure time or a subsequent strip posting time must be forwarded to the receiving facility unless assumed departure times are agreed upon and that time is within 3 minutes of the actual departure time.

4–3–9. VFR RELEASE OF IFR DEPARTURE

When an aircraft which has filed an IFR flight plan requests a VFR departure through a terminal facility, FSS, ARTCC Flight Data Unit, or air/ground communications station:

a. After obtaining, if necessary, approval from the facility/sector responsible for issuing the IFR clearance, you may authorize an IFR flight planned aircraft to depart VFR. Inform the pilot of the proper frequency and, if appropriate, where or when to contact the facility responsible for issuing the clearance.

PHRASEOLOGY–
VFR DEPARTURE AUTHORIZED. CONTACT (facility) ON (frequency) AT (location or time if required) FOR CLEARANCE.

b. If the facility/sector responsible for issuing the clearance is unable to issue a clearance, inform the pilot, and suggest that the delay be taken on the ground. If the pilot insists upon taking off VFR and obtaining an IFR clearance in the air, inform the facility/sector holding the flight plan of the pilot's intentions and, if possible, the VFR departure time.

4–3–10. FORWARDING DEPARTURE TIMES

TERMINAL

Unless alternate procedures are prescribed in a letter of agreement or automatic departure messages are being transmitted between automated facilities, forward departure times to the facility from which you received the clearance and also to the terminal departure controller when that position is involved in the departure sequence.

NOTE–
1. *Letters of agreement prescribing assumed departure times or mandatory radar handoff procedures are alternatives for providing equivalent procedures.*

2. *The letters "DM" flashing in the data block signify unsuccessful transmission of a departure message.*

REFERENCE–
FAA Order JO 7210.3, Para 12–2–6, Automatic Acquisition/Termination Areas.

Section 4. Route Assignment

4–4–1. ROUTE USE

Clear aircraft via routes consistent with the altitude stratum in which the operation is to be conducted by one or more of the following:

NOTE–
Except for certain NAVAIDs/routes used by scheduled air carriers or authorized for specific uses in the control of IFR aircraft, Air Traffic Service (ATS) routes, and NAVAIDs established for use at specified altitudes are shown on U.S. government charts or DOD FLIP charts.

REFERENCE–
FAA Order JO 7110.65, Para 2–5–2, NAVAID Terms.
FAA Order JO 7110.65, Para 4–1–2, Exceptions.
FAA Order JO 7110.65, Para 4–5–6, Minimum En Route Altitudes.
FAA Order JO 7110.65, Para 5–6–1, Application.

a. Designated ATS routes.

PHRASEOLOGY–
VIA:

VICTOR (color) (airway number)(the word Romeo when RNAV for existing Alaska routes),

or

J (route number) (the word Romeo when RNAV for existing Alaska routes),

or

Q (route number)

or

Tango (route number)

or

SUBSTITUTE (ATS route) FROM (fix) to (fix),

or

IR (route number).

CROSS/JOIN VICTOR/(color) (airway number), (number of miles) MILES (direction) OF (fix).

b. Radials, courses, azimuths to or from NAVAIDs.

PHRASEOLOGY–
VIA;

(name of NAVAID) (specified) RADIAL/COURSE/AZIMUTH,

or

(fix) AND (fix),

or

RADIALS OF (ATS route) AND (ATS route).

c. Random routes.

1. When not being radar monitored, GNSS-equipped RNAV aircraft on random RNAV routes must be cleared via or reported to be established on a point-to-point route.

(a) The points must be published NAVAIDs, waypoints, fixes or airports recallable from the aircraft's navigation database. The points must be displayed on controller video maps or depicted on the controller chart displayed at the control position. When applying nonradar separation the maximum distance between points must not exceed 500 miles.

(b) Protect 4 miles either side of the route centerline.

(c) Assigned altitudes must be at or above the highest MIA along the projected route segment being flown, including the protected airspace of that route segment.

2. Impromptu

PHRASEOLOGY–
DIRECT (name of NAVAID/waypoint/fix/airport)

NOTE–
A random impromptu routing is a direct course initiated by ATC or requested by the pilot during flight. Aircraft are cleared from their present position to a NAVAID, waypoint, fix, or airport.

3. Point-to-Point

PHRASEOLOGY–
After (fix) proceed direct (fix)

NOTE–
A point-to-point route segment begins and ends with a published NAVAID, waypoint, fix, or airport.

d. DME arcs of NAVAIDS.

e. Radials, courses, azimuths, and headings of departure or arrival routes.

f. SIDs/STARs.

g. Vectors.

h. Fixes defined in terms of degree-distance from NAVAIDs for special military operations.

i. Courses, azimuths, bearings, quadrants, or radials within a radius of a NAVAID.

PHRASEOLOGY–
CLEARED TO FLY (general direction from NAVAID) OF (NAVAID name and type) BETWEEN (specified) COURSES TO/BEARINGS FROM/RADIALS (NAVAID name when a NDB) WITHIN (number of miles) MILE RADIUS,

or

CLEARED TO FLY (specified) QUADRANT OF (NAVAID name and type) WITHIN (number of miles) MILE RADIUS.

EXAMPLE–
1. *"Cleared to fly east of Allentown VORTAC between the zero four five and the one three five radials within four zero mile radius."*

2. *"Cleared to fly east of Crystal Lake radio beacon between the two two five and the three one five courses to Crystal Lake within three zero mile radius."*

3. *"Cleared to fly northeast quadrant of Philipsburg VORTAC within four zero mile radius."*

j. Fixes/waypoints defined in terms of:

1. Published name; or

2. Degree-distance from NAVAIDs; or

3. Latitude/longitude coordinates, state the latitude and longitude in degrees and minutes including the direction from the axis such as North or West; or

PHRASEOLOGY–
"32 DEGREES, 45 MINUTES NORTH, 105 DEGREES, 37 MINUTES WEST."

4. Offset from published or established ATS route at a specified distance and direction for random (impromptu) RNAV Routes.

PHRASEOLOGY–
DIRECT (fix/waypoint)

DIRECT TO THE (facility) (radial) (distance) FIX.

OFFSET(distance) RIGHT/LEFT OF (route).

EXAMPLE–
"Direct SUNOL."
"Direct to the Appleton three one zero radial two five mile fix."
"Offset eight miles right of Victor six."

REFERENCE–
FAA Order JO 7110.65, Para 2-3-8 Aircraft Equipment Suffix.
FAA Order JO 7110.65, Para 2-5-3 NAVAID Fixes
FAA Order JO 7110.65, Para 4-1-2, Exceptions
FAA Order JO 7110.65, Para 5-5-1, Application
FAA Order JO 7110.65, Para 6-5-4, Minima Along Other Than Established Airways or Routes.
P/CG Term - Global Navigation Satellite System (GNSS)[ICAO].

4–4–2. ROUTE STRUCTURE TRANSITIONS

To effect transition within or between route structures, clear an aircraft by one or more of the following methods, based on NAVAIDs or RNAV:

a. Vector aircraft to or from radials, courses, or azimuths of the ATS route assigned.

b. Assign a SID/STAR.

c. Clear departing or arriving aircraft to climb or descend via radials, courses, or azimuths of the ATS route assigned.

d. Clear departing or arriving aircraft directly to or between the NAVAIDs forming the ATS route assigned.

e. Clear aircraft to climb or descend via the ATS route on which flight will be conducted.

f. Clear aircraft to climb or descend on specified radials, courses, or azimuths of NAVAIDs.

g. Clear RNAV aircraft between designated or established ATS routes via random RNAV routes to a NAVAID, waypoint, airport or fix on the new route. Provide radar monitoring to aircraft transitioning via random RNAV routes.

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

REFERENCE–
FAA Order JO 7110.65, Para 4-1-2, Exceptions.
FAA Order JO 7110.65, Para 4-4-1, Route Use.
FAA Order JO 7110.65, Para 5-5-1, Application.
FAA Order JO 7110.65, Para 6–5–4, Minima Along Other Than Established Airways Or Routes.
P/CG Term – Global Navigation Satellite System (GNSS)[ICAO].

4–4–3. DEGREE-DISTANCE ROUTE DEFINITION FOR MILITARY OPERATIONS

EN ROUTE

a. Do not accept a military flight plan whose route or route segments do not coincide with designated airways or jet routes or with a direct course between NAVAIDs unless it is authorized in subpara b and meets the following degree-distance route definition and procedural requirements:

1. The route or route segments must be defined in the flight plan by degree-distance fixes composed of:

(a) A location identifier;

(b) Azimuth in degrees magnetic; and

(c) Distance in miles from the NAVAID used.

EXAMPLE–
"MKE 030025."

2. The NAVAIDs selected to define the degree-distance fixes must be those authorized for use at the altitude being flown and at a distance within the published service volume area.

3. The distance between the fixes used to define the route must not exceed:

(a) Below FL 180– 80 miles;

(b) FL 180 and above– 260 miles; and

(c) For celestial navigation routes, all altitudes– 260 miles.

4. Degree-distance fixes used to define a route must be considered compulsory reporting points except that an aircraft may be authorized by ATC to omit reports when traffic conditions permit.

5. Military aircraft using degree-distance route definition procedures must conduct operations in accordance with the following:

(a) Unless prior coordination has been effected with the appropriate air traffic control facility, flight plan the departure and the arrival phases to conform with the routine flow of traffic when operating within 75 miles of the departure and the arrival airport. Use defined routes or airways or direct courses between NAVAIDs or as otherwise required to conform to the normal flow of traffic.

(b) Flight plans must be filed at least 2 hours before the estimated time of departure.

b. The following special military operations are authorized to define routes, or portions of routes, by degree-distance fixes:

1. Airborne radar navigation, radar bomb scoring (RBS), and airborne missile programming conducted by the USAF, USN, and RAF.

2. Celestial navigation conducted by the USAF, USN, and RAF.

3. Target aircraft operating in conjunction with air defense interceptors, and air defense interceptors while en route to and from assigned airspace.

4. Missions conducted above FL 450.

5. USN fighter and attack aircraft operating in positive control airspace.

6. USN/USMC aircraft, TACAN equipped, operating within the Honolulu FIR/Hawaiian airways area.

7. USAF/USN/USMC aircraft flight planned to operate on MTRs.

8. USAF Air Mobility Command (AMC) aircraft operating on approved station-keeping equipment (SKE) routes in accordance with the conditions and limitations listed in FAA Exemption No. 4371 to 14 CFR Section 91.177(a)(2) and 14 CFR Section 91.179(b)(1).

4–4–4. ALTERNATIVE ROUTES

When any part of an airway or route is unusable because of NAVAID status, clear aircraft that are not RNAV capable via one of the following alternative routes:

a. A route depicted on current U.S. Government charts/publications. Use the word "substitute" immediately preceding the alternative route in issuing the clearance.

b. A route defined by specifying NAVAID radials, courses, or azimuths.

c. A route defined as direct to or between NAVAIDs.

d. Vectors.

NOTE–
Inform area navigation aircraft that will proceed to the NAVAID location of the NAVAID outage.

4–4–5. CLASS G AIRSPACE

Include routes through Class G airspace only when requested by the pilot.

NOTE–

1. *Separation criteria are not applicable in Class G airspace. Traffic advisories and safety alerts are applicable within Class G airspace to aircraft that are in direct communication with ATC.*

2. *Flight plans filed for random RNAV routes through Class G airspace are considered a request by the pilot.*

3. *Flight plans containing MTR segments in/through Class G airspace are considered a request by the pilot.*

REFERENCE–

FAA Order JO 7110.65, Para 2–1–1, ATC Service
PCG, Class G Airspace
PCG, Uncontrolled Airspace

4–4–6. DIRECT CLEARANCES

a. Unless operational necessity dictates, do not issue a routing clearance that will take an aircraft off of its flight plan route if:

1. The aircraft is part of a known traffic management initiative.

2. The part of the route under consideration for the direct routing is within a protected segment. If a flight routing within a protected segment is amended, coordination must be accomplished as follows:

(a) ATCS: with TMU.

(b) Terminal facility TMU: with overlying ARTCC TMU.

(c) ARTCC TMU (for amendments outside their facility): with ATCSCC.

b. *EN ROUTE*. Do not issue revised routing clearances that will take an aircraft off its flight plan route past the last fix in your facility's airspace, unless requested by the pilot or operational necessity dictates.

NOTE–

Nothing in this paragraph must preclude a controller from issuing a routing clearance that conforms to a letter of agreement or standard operating procedure within their own facility or between facilities, is required to maintain separation or comply with traffic flow management initiatives.

d. Advise pilots when the ILS on the runway in use is not operational if that ILS is on the same frequency as an operational ILS serving another runway.

EXAMPLE–
"Expect visual approach runway two five right, runway two five right I–L–S not operational."

REFERENCE–
FAA Order JO 7110.65, Para 2–7–2, Altimeter Setting Issuance Below Lowest Usable FL.
FAA Order JO 7110.65, Para 5–10–2, Approach Information.
14 CFR Section 91.129 Operations in Class D Airspace, Subpara (d)(2).

e. *TERMINAL*: If multiple runway transitions are depicted on a STAR procedure, advise pilots of the runway assignment on initial contact or as soon as possible thereafter.

4–7–11. ARRIVAL INFORMATION BY APPROACH CONTROL FACILITIES

TERMINAL

a. Forward the following information to nonapproach control towers soon enough to permit adjustment of the traffic flow or to FSSs soon enough to provide local airport advisory where applicable:

1. Aircraft identification.

2. Type of aircraft.

3. ETA.

4. Type of instrument approach procedure the aircraft will execute; or

5. For SVFR, the direction from which the aircraft will enter Class B, Class C, Class D, or Class E surface area and any altitude restrictions that were issued; or

6. For aircraft executing a contact approach, the position of the aircraft.

NOTE–
Specific time requirements are usually stated in a letter of agreement.

b. Forward the following information to the tower when the tower and TRACON are part of the same facility:

1. Aircraft identification.

2. Type aircraft if required for separation purposes.

3. Type of instrument approach procedure and/or runway if differing from that in use.

NOTE–
The local controller has the responsibility to determine whether or not conditions are adequate for the use of ATTS data on the CTRD where a facility directive authorizes its use for the transfer of arrival data.

REFERENCE–
FAA Order JO 7210.3, Para 12–2–4, Use of Modify and Quick Look Functions.
FAA Order JO 7210.3, Para 12–7–4, Use of STARS Quick Look Functions.

c. Where the collocated or satellite tower has ATTS data displayed on its CTRD, the ATTS modify or quick look functions may be used to forward arrival data provided that a facility directive at the collocated tower or a letter of agreement with the satellite tower exists which outlines procedures for using ATTS for transferring this data.

d. Forward the following information to centers:

1. Where two or more instrument approach procedures are published for the airport, the particular procedure which an aircraft can expect or that it will be vectored toward the airport for a visual approach.

2. Highest altitude being used by the approach control facility at the holding fix.

3. Average time interval between successive approaches.

4. Arrival time of aircraft over the holding fix or, if control has been transferred to you before an aircraft has reached the fix, a statement or other indication acknowledging receipt of control responsibility.

5. Revised EFC if different by 10 minutes or more from that issued by the center.

6. Missed approaches if they affect center operations.

7. Information relating to an unreported or overdue aircraft.

4–7–12. AIRPORT CONDITIONS

a. *EN ROUTE.* Before issuing an approach clearance or en route descent, and subsequently as changes occur, inform an aircraft of any abnormal operation of approach and landing aids and of destination airport conditions that you know of which might restrict an approach or landing.

NOTE–
1. *Airport conditions information, in the provision of en route approach control service, does not include information pertaining to cold temperature compensation or the airport surface environment other than the landing area(s) or obstruction information for aircraft that will be cleared for an instrument approach. Accordingly, D NOTAMs that contain the keywords TAXIWAY (TWY), RAMP, APRON, or SERVICE (SVC) are not required to be issued. Additionally, Obstruction NOTAMs (OBST) are not required to be issued if an aircraft will be cleared for an instrument approach.*

2. *When advised of special use airspace (SUA) or military training route (MTR) activation, appropriate action is taken to separate nonparticipating IFR aircraft from those activities when required, and/or to issue applicable advisories as warranted. When meeting this requirement, there is no requirement for controllers to additionally issue the associated D NOTAM activating that SUA or MTR to the pilot. Accordingly, D NOTAMs for SUA that contain the accountability codes SUAE, SUAC, and SUAW are not required to be issued.*

b. *TERMINAL.* On first contact or as soon as possible thereafter, and subsequently as changes occur, inform an aircraft of any abnormal operation of approach and landing aids and of destination airport conditions that you know of which might restrict an approach or landing. This information may be omitted if it is contained in the ATIS broadcast and the pilot states the appropriate ATIS code.

REFERENCE–
FAA Order JO 7110.65, Chapter 3, Section 3, Airport Conditions.

c. Issue RwyCC contained in a FICON NOTAM to aircraft in accordance with one of the following:

1. Before or when an approach clearance is issued.

2. Before an en route descent clearance is issued.

3. *TERMINAL.* Prior to departure.

4. As soon as possible after receipt of any subsequent changes in previously issued RwyCC information.

d. RwyCC may be issued in lieu of the complete FICON NOTAM. Issue the complete FICON NOTAM upon pilot request, workload permitting.

EXAMPLE–
Boston Runway Two Seven, field condition, three, three, three, one hundred percent, two inches dry snow over compacted snow. Observed at one five three zero zulu.

NOTE–
RwyCC may be transmitted via the ATIS as prescribed in Paragraphs 2–9–3, Content; 3–3–1, Landing Area Condition; 3–9–1, Departure Information; and 3–10–1, Landing Information.

e. *TERMINAL.* Where RCRs are provided, transmit this information to USAF and ANG aircraft. Issue the RCR to other aircraft upon pilot request.

NOTE–
USAF offices furnish RCR information at airports serving USAF and ANG aircraft.

REFERENCE–
FAA Order JO 7110.65, Para 2–9–3, Content.
FAA Order JO 7110.65, Para 3–3–1, Landing Area Condition.
FAA Order JO 7110.65, Para 3–9–1, Departure Information.
FAA Order JO 7110.65, Para 3–10–1, Landing Information.

4–7–13. SWITCHING ILS RUNWAYS

TERMINAL

When a change is made from one ILS to another at airports equipped with multiple systems which are not used simultaneously, coordinate with the facilities which use the fixes formed by reference to these NAVAIDs.

Section 8. Approach Clearance Procedures

4–8–1. APPROACH CLEARANCE

a. Clear aircraft for "standard" or "special" instrument approach procedures only.

1. To require an aircraft to execute a particular instrument approach procedure, specify in the approach clearance the name of the approach as published on the approach chart. Where more than one procedure is published on a single chart and a specific procedure is to be flown, amend the approach clearance to specify execution of the specific approach to be flown. If only one instrument approach of a particular type is published, the approach needs not be identified by the runway reference.

2. An aircraft conducting an ILS or LDA approach must be advised at the time an approach clearance is issued when the glideslope is reported out of service, unless the title of the published approach procedure allows (for example, ILS or LOC Rwy 05).

3. Standard instrument approach procedures (SIAP) must begin at an initial approach fix (IAF) or an intermediate fix (IF) if there is not an IAF.

4. Where adequate radar coverage exists, radar facilities may vector aircraft to the final approach course in accordance with Paragraph 5-9-1, Vectors to Final Approach Course, and Paragraph 5-9-2, Final Approach Course Interception.

5. Where adequate radar coverage exists, radar facilities may clear an aircraft to any fix 3 NM or more prior to the FAF, along the final approach course, at an intercept angle not greater than 30 degrees.

6. Controllers must not disapprove a pilot request to cold temperature compensate in conjunction with the issuance of an approach clearance.

PHRASEOLOGY–

CLEARED (type) APPROACH.

CLEARED APPROACH.

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

CLEARED (specific procedure to be flown) APPROACH.

(Where more than one procedure is published on a single chart and a specific procedure is to be flown),

CLEARED (ILS/LDA) APPROACH, GLIDESLOPE UNUSABLE.

(To authorize a pilot to execute an ILS or an LDA approach when the glideslope is out of service)

CLEARED LOCALIZER APPROACH

(When the title of the approach procedure contains "or LOC")

CANCEL APPROACH CLEARANCE (additional instructions as necessary)

(When it is necessary to cancel a previously issued approach clearance)

EXAMPLE–

"Cleared Approach."
"Cleared (V-O-R/I-L-S/Localizer) Approach."
"Cleared L-D-A Runway Three-Six Approach."
"Cleared Localizer Back Course Runway One-Three Approach."
"Cleared (GPS/RNAV Z) Runway Two-Two Approach."
"Cleared BRANCH ONE Arrival and (ILS/RNAV) Runway One-Three Approach."
"Cleared I-L-S Runway Three-Six Approach, glideslope unusable."
"Cleared S-D-F Approach."
"Cleared G-L-S Approach."

NOTE–

1. *Clearances authorizing instrument approaches are issued on the basis that, if visual contact with the ground is made before the approach is completed, the entire approach procedure will be followed unless the pilot receives approval for a contact approach, is cleared for a visual approach, or cancels their IFR flight plan.*

2. *Approach clearances are issued based on known traffic. The receipt of an approach clearance does not relieve the pilot of his/her responsibility to comply with applicable Parts of Title 14 of the Code of Federal Regulations and the notations on instrument approach charts which levy on the pilot the responsibility to comply with or act on an instruction; for example, "Straight-in minima not authorized at night," "Procedure not authorized when glideslope/glidepath not used," "Use of procedure limited to aircraft authorized to use airport," or "Procedure not authorized at night" or Snowflake icon with associated temperature.*

3. *In some cases, the name of the approach, as published, is used to identify the approach, even though a component of the approach aid, other than the localizer on an ILS is inoperative.*

4. *Where more than one procedure to the same runway is published on a single chart, each must adhere to all final approach guidance contained on that chart, even though each procedure will be treated as a separate entity when authorized by ATC.*

5. *The use of alphabetical identifiers in the approach name with a letter from the end of the alphabet; for example, X, Y, Z, such as "HI TACAN Z Rwy 6L or RNAV(GPS) Y Rwy 04", denotes multiple straight-in approaches to the same runway that use the same approach aid.*

6. *Alphabetical suffixes with a letter from the beginning of the alphabet; for example, A, B, C, denote a procedure that does not meet the criteria for straight-in landing minimums authorization.*

7. *14 CFR Section 91.175(j) requires a pilot to receive a clearance to conduct a procedure turn when vectored to a final approach course or fix, conducting a timed approach, or when the procedure specifies "NO PT."*

8. *An aircraft which has been cleared to a holding fix and prior to reaching that fix is issued a clearance for an approach, but not issued a revised routing; that is, "proceed direct to...." may be expected to proceed via the last assigned route, a feeder route (if one is published on the approach chart), and then to commence the approach as published. If, by following the route of flight to the holding fix, the aircraft would overfly an IAF or the fix associated\ with the beginning of a feeder route to be used, the aircraft is expected to commence the approach using the published feeder route to the IAF or from the IAF as appropriate; that is, the aircraft would not be expected to overfly and return to the IAF or feeder route.*

9. *Approach name items contained within parenthesis; for example, RNAV (GPS) Rwy 04, are not included in approach clearance phraseology.*

10. *Pilots are required to advise ATC when intending to apply cold temperature compensation to instrument approach segments. Pilots must advise ATC of the amount of compensation required for each affected segment on initial contact or as soon as possible. Pilots are not required to advise ATC when correcting on the final segment only. Controllers may delay the issuance of an approach clearance to comply with approved separation requirements when informed that a pilot will apply cold temperature compensation (CTC). Pilots will not apply altitude compensation, unless authorized, when assigned an altitude prior to an approach clearance. Consideration should be given to vectoring aircraft at or above the requested compensating altitude if possible. This eliminates pilots having to climb once on the approach.*

REFERENCE–
FAA Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS).
P/CG Term – Cold Temperature Compensation
AIM, Paragraph 5-1-17, Cold Temperature Operations
AIM, Paragraph 5-5-4, Instrument Approach

11. *There are some systems, for example, Enhanced Flight Vision System (EFVS), which allow pilots to conduct Instrument Approach Procedures (IAP) when the reported weather is below minimums prescribed on the IAP to be flown.*

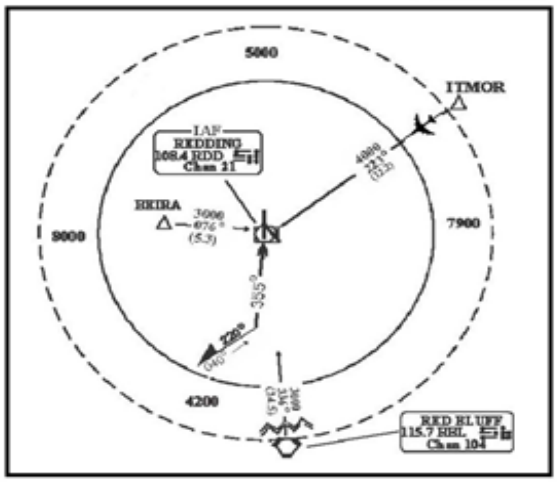
REFERENCE–
14 CFR § 91.175(l)
P/CG Term – EFVS

b. For aircraft operating on unpublished routes, issue the approach clearance only after the aircraft is:

1. Established on a segment of a published route or instrument approach procedure, or (See FIG 4–8–1)

EXAMPLE–
The aircraft is established on a segment of a published route at 5,000 feet. "Cleared V-O-R Runway Three Four Approach."

FIG 4–8–1
Approach Clearance Example

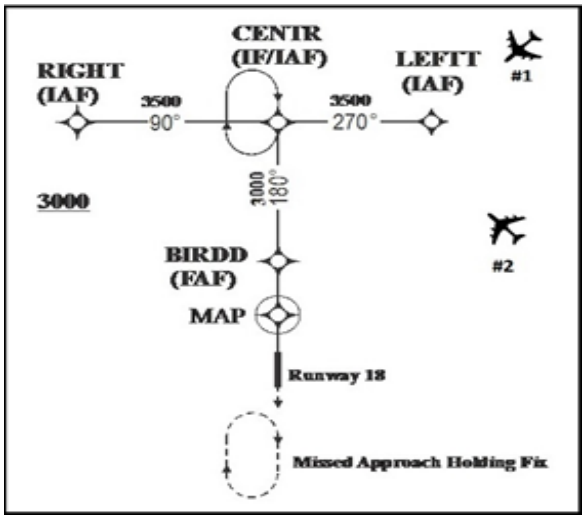


2. Assigned an altitude to maintain until the aircraft is established on a segment of a published route or instrument approach procedure. (See FIG 4-8-2.)

EXAMPLE–
Aircraft 1 is cleared direct LEFTT. The MVA in the area is 3,000 feet, and the aircraft is at 4,000 feet. "Cross LEFTT at or above three thousand five hundred, cleared RNAV Runway One Eight Approach."

The MVA in the area is 3,000 feet and Aircraft 2 is at 3,000 feet. "Cleared direct LEFTT direct CENTR, maintain three thousand until CENTR, cleared straight-in RNAV Runway One Eight Approach."

FIG 4–8–2
Approach Clearance Example



NOTE–
1. *The altitude assigned must assure IFR obstruction clearance from the point at which the approach clearance is issued until established on a segment of a published route or instrument approach procedure.*

2. *If the altitude assignment is VFR-on-top, it is conceivable that the pilot may elect to remain high until arrival over the final approach fix which may require the pilot to circle to descend so as to cross the final approach fix at an altitude that would permit landing.*

3. *An aircraft is not established on an approach until at or above an altitude published on that segment of the approach.*

REFERENCE–
FAA Order 8260.3 United States Standard for Terminal Instrument Procedures (TERPS), Para 10-2

c. Except for visual approaches, do not clear an aircraft direct to the FAF unless it is also an IAF, wherein the aircraft is expected to execute the depicted procedure turn or hold-in-lieu of procedure turn.

d. Intercept angles greater than 90 degrees may be used when a procedure turn, a hold-in-lieu of procedure turn pattern, or arrival holding is depicted and the pilot will execute the procedure.

e. If a procedure turn, hold-in-lieu of procedure turn, or arrival holding pattern is depicted and the angle of intercept is 90 degrees or less, the aircraft must be instructed to conduct a straight-in approach if ATC does not want the pilot to execute a procedure turn or hold-in-lieu of procedure turn. (See FIG 4–8–3)

PHRASEOLOGY–
CLEARED STRAIGHT-IN (type) APPROACH

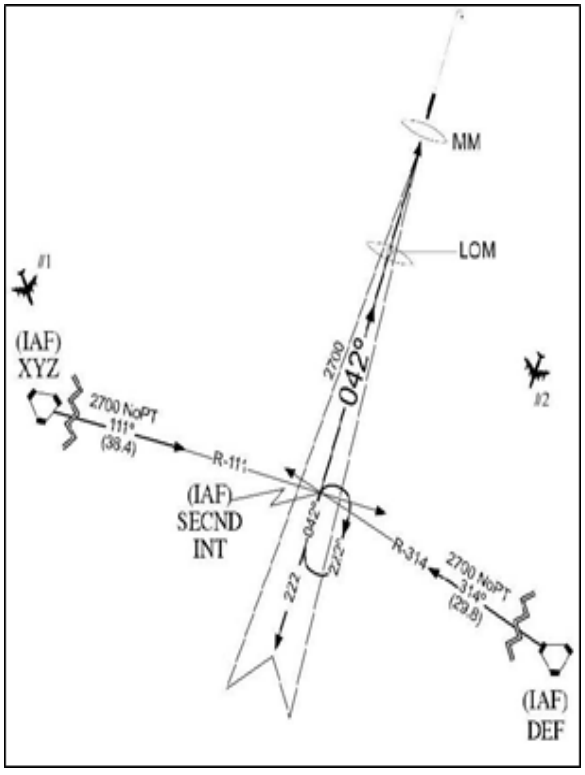
NOTE–
1. *Restate "cleared straight-in" in the approach clearance even if the pilot was advised earlier to expect a straight-in approach.*

2. *Some approach charts have an arrival holding pattern depicted at the IAF using a "thin line" holding symbol. It is charted where holding is frequently required prior to starting the approach procedure so that detailed holding instructions are not required. The arrival holding pattern is not authorized unless assigned by ATC.*

EXAMPLE–
"Cleared direct SECND, maintain at or above three thousand until SECND, cleared straight-in ILS Runway One-Eight approach."

REFERENCE–
AIM, Paragraph 5-4-5, Instrument Approach Procedure Charts
AIM, Paragraph 5-4-9, Procedure Turn and Hold-in-lieu of Procedure Turn

FIG 4–8–3
Approach Clearance Example
For Aircraft On a Conventional Approach



EXAMPLE–
Aircraft 1 can be cleared direct to XYZ VORTAC, or SECND because the intercept angle is 90 degrees or less.

Aircraft 2 cannot be cleared to XYZ VORTAC because the intercept angle is greater than 90 degrees.

Aircraft 2 can be cleared to SECND if allowed to execute the hold-in-lieu of procedure turn pattern.

f. Except when applying radar procedures, timed or visual approaches, clear an aircraft for an approach to an airport when the preceding aircraft has landed or canceled IFR flight plan.

g. Where instrument approaches require radar monitoring and radar services are not available, do not use the phraseology "cleared approach," which allows the pilot his/her choice of instrument approaches.

RNAV APPLICATION

h. For RNAV–equipped aircraft operating on unpublished routes, issue approach clearance for conventional or RNAV SIAP including approaches with RF legs only after the aircraft is: (See FIG 4–8–4).

1. Established on a heading or course direct to the IAF at an intercept angle not greater than 90 degrees and is assigned an altitude in accordance with b2. Radar monitoring is required to the IAF for RNAV (RNP) approaches when no hold–in–lieu of procedure turn is executed.

EXAMPLE–
Aircraft 1 can be cleared direct to CENTR. The intercept angle at that IAF is 90 degrees or less. The minimum altitude for IFR operations (14 CFR, section 91.177) along the flight path to the IAF is 3,000 feet. If a hold in lieu of procedure turn pattern is depicted at an IAF and a TAA is not defined, the aircraft must be instructed to conduct a straight-in approach if ATC does not want the pilot to execute a hold-in-lieu procedure turn. "Cleared direct CENTR, maintain at or above three thousand until CENTR, cleared straight-in RNAV Runway One-Eight Approach."

2. Established on a heading or course direct to the IF at an angle not greater than 90 degrees, provided the following conditions are met:

(a) Assign an altitude in accordance with b2 that will permit a normal descent to the FAF.

NOTE–
Controllers should expect aircraft to descend at approximately 150-300 feet per nautical mile when applying guidance in subpara h2(a).

(b) Radar monitoring is provided to the IF.

(c) The SIAP must identify the intermediate fix *with the letters "IF."*

(d) For procedures where an IAF is published, the pilot is advised to expect clearance to the IF at least 5 miles from the fix.

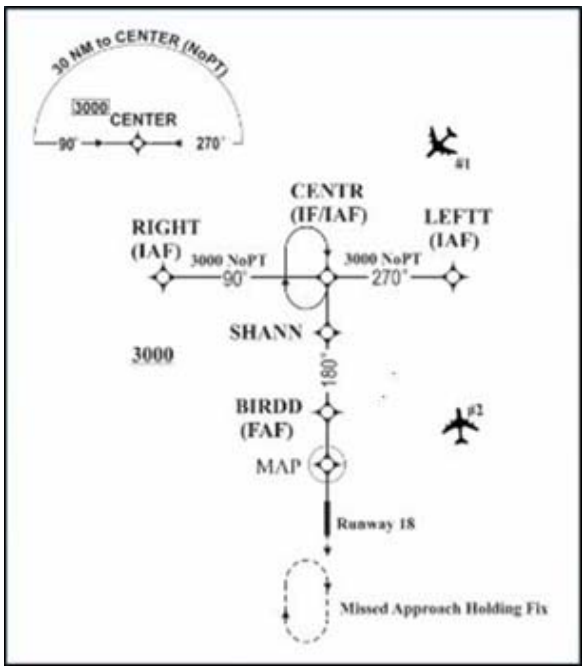
EXAMPLE–
"Expect direct CENTR for RNAV Runway One-Eight Approach."

3. Established on a heading or course direct to a fix between the IF and FAF, at an intercept angle not greater than 30 degrees, and assigned an altitude in accordance with b2.

EXAMPLE–
Aircraft 1 is more than 5 miles from SHANN. The minimum altitude for IFR operations (14 CFR Section 91.177) along the flight path to SHANN is 3,000 feet. SHANN is a step down fix between the IF/IAF (CENTR) and the FAF. To clear Aircraft 1 to SHANN, ATC must ensure the intercept angle for the intermediate segment at SHANN is not greater than 30 degrees and must be cleared to an altitude that will allow a normal descent to the FAF. "Cleared direct SHANN, cross SHANN at or above three thousand, cleared RNAV Runway One-Eight Approach."

REFERENCE–
FAA Order 7110.65, Par 5-6-2, Methods
FAA Order 7110.65, Chapter 5, Section 9, Radar Arrivals

FIG 4–8–4
Approach Clearance Example For RNAV Aircraft



EXAMPLE–
Aircraft 2 cannot be cleared direct to CENTR unless the aircraft is allowed to execute the hold-in-lieu of procedure turn. The intercept angle at that IF/IAF is greater than 90 degrees. The minimum altitude for IFR operations (14 CFR Section 91.177) along the flight path to the IAF is 3,000 feet. "Cleared direct CENTR, maintain at or above three thousand until CENTR, cleared RNAV Runway One-Eight approach." The pilot is expected to proceed direct CENTR and execute the hold-in-lieu of procedure turn.

Aircraft 2 can be cleared direct LEFTT. The intercept angle at that IAF is 90 degrees or less. The minimum altitude for IFR operations (14 CFR Section 91.177) along the flight path to the IAF is 3,000 feet. "Cleared direct LEFTT, maintain at or above three thousand until LEFTT, cleared RNAV Runway One-Eight Approach." The pilot does not have to be cleared for a straight-in approach since no hold-in-lieu of procedure turn pattern is depicted at LEFTT.

REFERENCE–
FAA Order JO 7110.65, Chapter 5, Section 9, Radar Arrivals

i. Clear RNAV–equipped aircraft conducting RNAV instrument approach procedures that contain radius to fix (RF) legs:

1. Via published transitions, or

2. In accordance with paragraph h.

3. Do not clear aircraft direct to any waypoint beginning or within an RF leg.

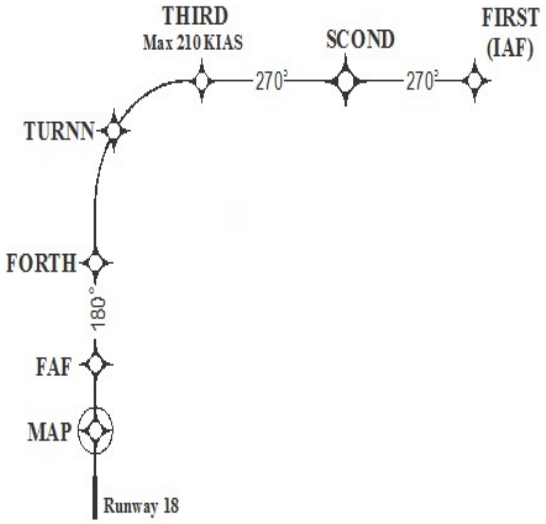
4. Do not assign fix/waypoint crossing speeds in excess of charted speed restrictions.

NOTE–
1. *RNAV approaches (containing RF legs) that commence at 10,000 feet or above require special procedures that will be site specific and specified in a facility directive.*

2. *An RF leg is defined as a curved segment indicating a constant radius circular path about a defined turn center that begins at a waypoint. RF legs may have maximum airspeeds charted for procedural containment that must be followed.*

3. *If an aircraft is vectored off the procedure, expect the aircraft to request a return to an IAF.*

FIG 4–8–5
Radius to Fix (RF) and Track to Fix (TF)



NOTE–
1. *The segment between THIRD and FORTH in FIG 4-8-5 is an RF leg.*

2. *The straight segments between waypoints in FIG 4-8-5 are TF legs.*

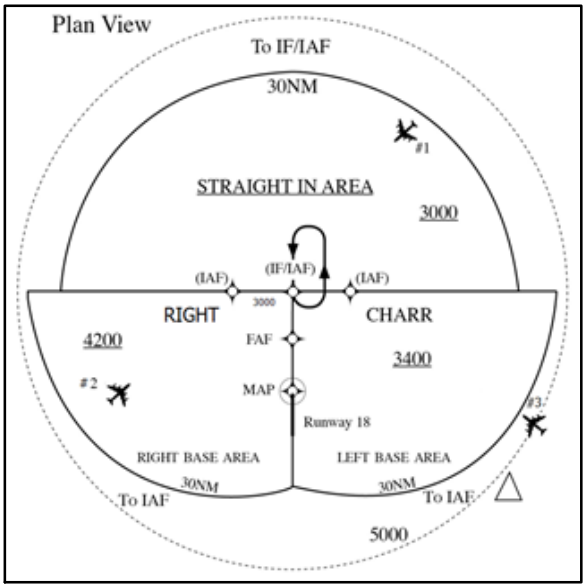
j. Where a terminal arrival area (TAA) has been established to support RNAV approaches, use the procedures under subpara b above. (See FIG 4–8–6.)

NOTE–
1. *Aircraft that are within the lateral boundary of a TAA, and at or above the TAA minimum altitude, are established on the approach and may be issued an approach clearance without an altitude restriction.*

2. *The TAA minimum altitude may be higher than the MVA/MIA. If an aircraft is below the TAA minimum altitude, it must either be assigned an altitude to maintain until established on a segment of a published route or instrument approach procedure, or climbed to the TAA altitude.*

EXAMPLE–
Aircraft 1: The aircraft is at or above the minimum TAA altitude and within the lateral boundary of the TAA. "Cleared R–NAV Runway One Eight Approach."
Aircraft 2: The MVA is 3000 feet and the aircraft is level at 4000 feet. The TAA minimum altitude is 4200 feet. The aircraft must be assigned an altitude to maintain until established on a segment of the approach. "Cross RIGHT at or above three thousand, cleared R–NAV Runway One Eight Approach."
Aircraft 3: The aircraft is inbound to the CHARR IAF on an unpublished direct route at 7,000 feet. The minimum IFR altitude for IFR operations (14 CFR Section 91.177) along this flight path to the IAF is 5,000 feet. "Cleared direct CHARR, maintain at or above five thousand until entering the TAA, cleared RNAV Runway One–Eight Approach."

FIG 4–8–6
Basic "T" and TAA Design



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

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

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

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

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

4–8–2. CLEARANCE LIMIT

Issue approach or other clearances, as required, specifying the destination airport as the clearance limit if airport traffic control service is not provided even though this is a repetition of the initial clearance.

PHRASEOLOGY–
CLEARED TO (destination) AIRPORT

4–8–3. RELAYED APPROACH CLEARANCE

TERMINAL

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

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

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

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

and the military authority which originated the high altitude instrument approach procedure.

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

4–8–5. SPECIFYING ALTITUDE

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

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

4–8–6. CIRCLING APPROACH

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

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

PHRASEOLOGY–
CIRCLE TO RUNWAY (number),

or

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

NOTE–
Where standard instrument approach procedures (SIAPs) authorize circling approaches, they provide a basic minimum of 300 feet of obstacle clearance at the MDA within the circling area considered. The dimensions of these areas, expressed in distances from the runways, vary for the different approach categories of aircraft. In some cases a SIAP may otherwise restrict circling approach maneuvers.

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

4–8–7. SIDE–STEP MANEUVER

TERMINAL

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

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

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

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

4–8–8. COMMUNICATIONS RELEASE

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

PHRASEOLOGY–
CHANGE TO ADVISORY FREQUENCY APPROVED.

NOTE–
An expeditious frequency change permits the aircraft to receive timely local airport traffic information in accordance with AC 90–42, Traffic Advisory Practices at Airports Without Operating Control Towers.

4–8–9. MISSED APPROACH

Except in the case of a VFR aircraft practicing an instrument approach, an approach clearance automatically authorizes the aircraft to execute the missed approach procedure depicted for the instrument approach being flown. An alternate missed approach procedure as published on the appropriate FAA Form 8260 or appropriate military form may be assigned when necessary. Once an aircraft commences a missed approach, it may be radar vectored.

NOTE–
1. *Alternate missed approach procedures are published on*

the appropriate FAA Form 8260 or appropriate military form and require a detailed clearance when they are issued to the pilot.

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

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

REFERENCE–
FAA Order JO 7110.65, Para 4–8–11, Practice Approaches.
FAA Order JO 7110.65, Para 5–6–3, Vectors Below Minimum Altitude.
FAA Order JO 7110.65, Para 5–8–3, Successive or Simultaneous Departures.
FAA Order 8260.19, Flight Procedures and Airspace, Paras 404 and 815.
FAA Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), Paras 275, 278, 943, 957, and 997.
AIM, Paragraph 5-5-5, Missed Approach

4–8–10. APPROACH INFORMATION

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

a. Initial approach altitude.

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

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

d. Final approach course and altitude.

e. Missed approach procedures if considered necessary.

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

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

REFERENCE–
AIM, Paragraph 5-1-17, Cold Temperature Operations
AIM, Paragraph 5-5-4, Instrument Approach
AIM, Paragraph 5-5-5, Missed Approach

4–8–11. PRACTICE APPROACHES

Except for military aircraft operating at military airfields, ensure that neither VFR nor IFR practice approaches disrupt the flow of other arriving and departing IFR or VFR aircraft. Authorize, withdraw authorization, or refuse to authorize practice approaches as traffic conditions require. Normally, approaches in progress should not be terminated.

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

a. Separation.

1. IFR aircraft practicing instrument approaches must be afforded approved separation in accordance with Chapter 3, Chapter 4, Chapter 5, Chapter 6, and Chapter 7 minima until:

(a) The aircraft lands, and the flight is terminated, or

(b) The pilot cancels the flight plan.

2. Where procedures require application of IFR separation to VFR aircraft practicing instrument approaches, IFR separation in accordance with Chapter 3, Chapter 4, Chapter 5, Chapter 6, and Chapter 7 must be provided. Controller responsibility for separation begins at the point where the approach clearance becomes effective. Except for super or heavy aircraft, 500 feet vertical separation may be applied between VFR aircraft and between a VFR and an IFR aircraft.

REFERENCE–
FAA Order JO 7210.3, Para 6–4–4, Practice Instrument Approaches.
FAA Order JO 7210.3, Para 10–4–5, Practice Instrument Approaches.

3. Where separation services are not provided to VFR aircraft practicing instrument approaches, the controller must;

(a) Instruct the pilot to maintain VFR.

(b) Advise the pilot that separation services are not provided.

PHRASEOLOGY–
"(Aircraft identification) MAINTAIN VFR, PRACTICE

APPROACH APPROVED, NO SEPARATION SERVICES PROVIDED."

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

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

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

5. All VFR aircraft must be instructed to maintain VFR on initial contact or as soon as possible thereafter.

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

b. Missed Approaches.

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

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

2. VFR aircraft are not automatically authorized to execute the missed approach procedure. This authorization must be specifically requested by the pilot and approved by the controller. When a missed approach has been approved and the practice approach is conducted in accordance with paragraph 4–8–11 a2, separation must be provided throughout the procedure including the missed approach. If the practice approach is conducted in accordance with paragraph 4–8–11 a3, separation services are not required during the missed approach.

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

4–8–12. LOW APPROACH AND TOUCH-AND-GO

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

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

"Maintain VFR, contact tower."

(Issue other instructions as appropriate.)

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

1. After initial track start or track start from coast is required, or

2. During and after the display of a missing, unreasonable, exceptional, or otherwise unreliable Mode C readout indicator.

c. Consider an altitude readout valid when:

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

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

SAY ALTITUDE.

or

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

SAY FLIGHT LEVEL.

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

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

REFERENCE–
FAA Order JO 7110.65, Para 5–2–24 , Altitude Filters.
FAA Order JO 7110.65, Para 5–14–5 , Selected Altitude Limits.
FAA Order JO 7210.3, Para 12–2–3 , Display Data.

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

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

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

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

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

2. If the altitude readout continues to be invalid:

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

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

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

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

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

PHRASEOLOGY–
VERIFY USING TWO NINER NINER TWO AS YOUR ALTIMETER SETTING.

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

VERIFY FLIGHT LEVEL.

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

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

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

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

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

5–2–19. ALTITUDE CONFIRMATION–MODE C

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

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

a. The pilot states the assigned altitude, or

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

c. The Mode C readout is valid and indicates that the aircraft is established at the assigned altitude, or

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

PHRASEOLOGY–
(In level flight situations),VERIFY AT (altitude/flight level).

(In climbing/descending situations),

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

VERIFY ASSIGNED ALTITUDE (altitude).

or

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

VERIFY ASSIGNED FLIGHT LEVEL (flight level).

REFERENCE–
FAA Order JO 7110.65, Para 5–3–3 , Beacon Identification Methods.

5–2–20. ALTITUDE CONFIRMATION–NON–MODE C

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

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

1. The pilot states the assigned altitude, or

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

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

PHRASEOLOGY–
(In level flight situations),VERIFY AT (altitude/flight level).

(In climbing/descending situations),VERIFY ASSIGNED ALTITUDE/FLIGHT LEVEL (altitude/flight level).

b. USA. Reconfirm all pilot altitude read backs.

PHRASEOLOGY–
(If the altitude read back is correct),

AFFIRMATIVE (altitude).

(If the altitude read back is not correct),

NEGATIVE. CLIMB/DESCEND AND MAINTAIN (altitude),

or

NEGATIVE. MAINTAIN (altitude).

REFERENCE–
FAA Order JO 7110.65, Para 5–3–3 , Beacon Identification Methods.

5–2–21. AUTOMATIC ALTITUDE REPORTING

Inform an aircraft when you want it to turn on/off the automatic altitude reporting feature of its transponder.

PHRASEOLOGY–
SQUAWK ALTITUDE,

or

STOP ALTITUDE SQUAWK.

NOTE–
Controllers should be aware that not all aircraft have a capability to disengage the altitude squawk independently from the beacon code squawk. On some aircraft both functions are controlled by the same switch.

REFERENCE–
FAA Order JO 7110.65, Para 5–2–18 , Validation of Mode C Readout.
FAA Order JO 7110.65, Para 5–3–3 , Beacon Identification Methods.
P/CG Term– Automatic Altitude Report.

5–2–22. INFLIGHT DEVIATIONS FROM TRANSPONDER/MODE C REQUIREMENTS BETWEEN 10,000 FEET AND 18,000 FEET

Apply the following procedures to requests to deviate from the Mode C transponder requirement by aircraft operating in the airspace of the 48 contiguous states and the District of Columbia at and above 10,000 feet MSL and below 18,000 feet MSL, excluding the airspace at and below 2,500 feet AGL.

NOTE–
1. *14 CFR Section 91.215(b) provides, in part, that all U.S. registered civil aircraft must be equipped with an operable, coded radar beacon transponder when operating in the altitude stratum listed above. Such transponders must have a Mode 3/A 4096 code capability, replying to Mode 3/A interrogation with the code specified by ATC, or a Mode S capability, replying to Mode 3/A interrogations with the code specified by ATC. The aircraft must also be equipped with automatic pressure altitude reporting equipment having a Mode C capability that automatically replies to Mode C interrogations by transmitting pressure altitude information in 100–foot increments.*

2. *The exception to 14 CFR Section 91.215 (b) is 14 CFR Section 91.215(b)(5) which states: except balloons,*

gliders, and aircraft without engine–driven electrical systems.

REFERENCE–
FAA Order JO 7210.3, Chapter 20, Temporary Flight Restrictions.

a. Except in an emergency, do not approve inflight requests for authorization to deviate from 14 CFR Section 91.215(b)(5)(i) requirements originated by aircraft without transponder equipment installed.

b. Approve or disapprove other inflight deviation requests, or withdraw approval previously issued to such flights, solely on the basis of traffic conditions and other operational factors.

c. Adhere to the following sequence of action when an inflight VFR deviation request is received from an aircraft with an inoperative transponder or Mode C, or is not Mode C equipped:

1. Suggest that the aircraft conduct its flight in airspace unaffected by the CFRs.

2. Suggest that the aircraft file an IFR flight plan.

3. Suggest that the aircraft provide a VFR route of flight and maintain radio contact with ATC.

d. Do not approve an inflight deviation unless the aircraft has filed an IFR flight plan or a VFR route of flight is provided and radio contact with ATC is maintained.

e. You may approve an inflight deviation request which includes airspace outside your jurisdiction without the prior approval of the adjacent ATC sector/facility providing a transponder/Mode C status report is forwarded prior to control transfer.

f. Approve or disapprove inflight deviation requests within a reasonable period of time or advise when approval/disapproval can be expected.

REFERENCE–
FAA Order JO 7110.65, Para 5–3–3 , Beacon Identification Methods.

5–2–23. BEACON TERMINATION

Inform an aircraft when you want it to turn off its transponder.

PHRASEOLOGY–

STOP SQUAWK.

(For a military aircraft when you do not know if the military service requires that it continue operating on another mode),

STOP SQUAWK (mode in use).

REFERENCE–
FAA Order JO 7110.65, Para 5–3–3 , Beacon Identification Methods.

5–2–24. ALTITUDE FILTERS

TERMINAL

Set altitude filters to display Mode C altitude readouts to encompass all altitudes within the controller's jurisdiction. Set the upper limits no lower than 1,000 feet above the highest altitude for which the controller is responsible. In those stratified positions, set the lower limit to 1,000 feet or more below the lowest altitude for which the controller is responsible. When the position's area of responsibility includes down to an airport field elevation, the facility will normally set the lower altitude filter limit to encompass the field elevation so that provisions of Paragraph 2–1–6, Safety Alert, and Paragraph 5–2–18, Validation of Mode C Readout, subpara c2 may be applied. Air traffic managers may authorize temporary suspension of this requirement when target clutter is excessive.

5–2–25. INOPERATIVE OR MALFUNCTIONING ADS-B TRANSMITTER

Inform an aircraft when the ADS-B transmitter appears to be inoperative or malfunctioning. Notify the OS/CIC of the aircraft call sign and location of aircraft.

PHRASEOLOGY–
(Aircraft ID) YOUR ADS-B TRANSMITTER APPEARS TO BE INOPERATIVE / MALFUCTIONING.

5–2–26. ADS–B ALERTS

a. Call Sign Mis–Match (CSMM). A CSMM alert will occur when the ADS–B broadcast call sign does not match the flight plan call sign.

PHRASEOLOGY–
(Aircraft ID) YOUR ADS–B CALL SIGN DOES NOT MATCH YOUR FLIGHT PLAN CALL SIGN.

b. Duplicate ICAO Address. If the broadcast ICAO address is shared with one or more flights in the same ADS–B Service Area (regardless of altitude), and radar reinforcement is not available, target resolution may be lost on one or both targets. Notify the OS/CIC of the aircraft call sign and location of aircraft.

NOTE–
1. *If this occurs controllers should ensure targets remain radar reinforced or at least 6 NMs apart.*

2. *Duplicate ICAO Address Alerts appear as "DA" and are associated with the Data Block (DB) on STARS and CARTS systems. Duplicate ICAO Address Alerts appear as "DUP" and are associated with the DB on MEARTS systems. Duplicate ICAO Address Alerts appear as "Duplicate 24−bit Address" on ERAM systems.*

Section 4. Transfer of Radar Identification

5–4–1. APPLICATION

To provide continuous radar service to an aircraft and facilitate a safe, orderly, and expeditious flow of traffic, it is often necessary to transfer radar identification of an aircraft from one controller to another. This section describes the terms, methods, and responsibilities associated with this task. Interfacility and intrafacility transfers of radar identification must be accomplished in all areas of radar surveillance except where it is not operationally feasible. Where such constraints exist, they must be:

a. Covered in letters of agreement which clearly state that control will not be based upon a radar handoff, or

b. Coordinated by the transferring and receiving controllers for a specified period of time.

REFERENCE–
FAA Order JO 7110.65, Para 4–3–8, Coordination with Receiving Facility.

5–4–2. TERMS

a. *Handoff.* An action taken to transfer the radar identification of an aircraft from one controller to another controller if the aircraft will enter the receiving controller's airspace and radio communications with the aircraft will be transferred.

b. *Radar Contact.* The term used to inform the controller initiating a handoff that the aircraft is identified and approval is granted for the aircraft to enter the receiving controller's airspace.

c. *Point Out.* An action taken by a controller to transfer the radar identification of an aircraft to another controller and radio communications will not be transferred.

d. *Point Out Approved.* The term used to inform the controller initiating a point out that the aircraft is identified and that approval is granted for the aircraft to enter the receiving controller's airspace, as coordinated, without a communications transfer or the appropriate automated system response.

e. *Traffic.* A term used to transfer radar identification of an aircraft to another controller for the purpose of coordinating separation action. Traffic is normally issued:

1. In response to a handoff or point out;

2. In anticipation of a handoff or point out; or

3. In conjunction with a request for control of an aircraft.

f. *Traffic Observed.* The term used to inform the controller issuing the traffic restrictions that the traffic is identified and that the restrictions issued are understood and will be complied with.

5–4–3. METHODS

a. Transfer the radar identification of an aircraft by at least one of the following methods:

1. Physically point to the target on the receiving controller's display.

2. Use landline voice communications.

3. Use automation capabilities.

NOTE–
Automated handoff capabilities are only available when FDP is operational.

4. *TERMINAL.* Use the "Modify" or "Quick Look" functions for data transfer between the TRACON and tower cab only if specific procedures are established in a facility directive. The local controller has the responsibility to determine whether or not conditions are adequate for the use of ARTS/STARS data on the BRITE/DBRITE/TDW.

REFERENCE–
FAA Order JO 7210.3, Para 12–2–4, Use of Modify and Quick Look Functions.
FAA Order JO 7210.3, Para 12–7–4, Use of Stars Quick Look Functions.

b. When making a handoff, point-out, or issuing traffic restrictions, relay information to the receiving controller in the following order:

1. The position of the target relative to a fix, map symbol, or radar target known and displayed by both the receiving and transferring controller. Mileage from the reference point may be omitted when relaying the position of a target if a full data block associated with the target has been forced on the receiving controller's radar display.

EXAMPLE–
"Point out, Southwest of Richmond VOR . . .."

2. The aircraft identification, as follows:

(a) The aircraft call sign, or

(b) The discrete beacon code of the aircraft during interfacility point-outs only, if both the receiving and the transferring controllers agree.

NOTE–
Acceptance of a point-out using the discrete beacon code as the aircraft's identification constitutes agreement.

(c) EN ROUTE. The Computer Identification Number (CID) during intrafacility point-outs.

EXAMPLE–
"Point Out, Southwest of Richmond VOR, C-I-D 123…"

3. The assigned altitude, appropriate restrictions, and information that the aircraft is climbing or descending, if applicable, except when inter/intrafacility directives ensure that the altitude information will be known by the receiving controller.

NOTE–
When physically pointing to the target, you do not have to state the aircraft position.

4. Advise the receiving controller of pertinent information not contained in the data block or available flight data unless covered in an LOA or facility directive. Pertinent information may include:

(a) Assigned heading.

(b) Speed/altitude restrictions.

(c) Observed track or deviation from the last route clearance.

(d) Any other pertinent information.

PHRASEOLOGY–
HANDOFF/POINT-OUT/TRAFFIC (aircraft position) (aircraft ID),

or

(discrete beacon code point-out only) (altitude, restrictions, and other pertinent information, if applicable).

c. When receiving a handoff, point-out, or traffic restrictions, respond to the transferring controller as follows:

PHRASEOLOGY–
(Aircraft ID) (restrictions, if applicable) RADAR CONTACT,

or

(aircraft ID or discrete beacon code) (restrictions, if applicable) POINT-OUT APPROVED,

or

TRAFFIC OBSERVED,

or

UNABLE (appropriate information, as required).

d. If any doubt as to target identification exists after attempting confirmation in accordance with this section, apply the provisions of Paragraph 5–3–5, Questionable Identification.

REFERENCE–
FAA Order JO 7110.65, Para 5–2–18, Validation of Mode C Readout.

5–4–4. TRAFFIC

a. When using the term "traffic" for coordinating separation, the controller issuing traffic must issue appropriate restrictions.

b. The controller accepting the restrictions must be responsible to ensure that approved separation is maintained between the involved aircraft.

5–4–5. TRANSFERRING CONTROLLER HANDOFF

The transferring controller must:

a. Complete a radar handoff prior to an aircraft's entering the airspace delegated to the receiving controller.

REFERENCE–
FAA Order JO 7110.65, Para 2–1–14, Coordinate Use of Airspace.
FAA Order JO 7110.65, Para 2–1–15, Control Transfer.
FAA Order JO 7110.65, Para 5–4–6, Receiving Controller Handoff.

b. Verbally obtain the receiving controller's approval prior to making any changes to an aircraft's flight path, altitude, speed, or data block information while the handoff is being initiated or after acceptance, unless otherwise specified by a LOA or a facility directive.

c. Ensure that, prior to transferring communications:

1. Potential violations of adjacent airspace and potential conflicts between aircraft in their own area of jurisdiction are resolved.

2. Coordination has been accomplished with all controllers through whose area of jurisdiction the aircraft will pass prior to entering the receiving

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 radar-identified indicate it is a type which can be expected to give adequate primary/ASR–9/Full Digital Radar Primary Symbol return in the area where separation is applied; and

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

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

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

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

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

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

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

4. A radar-identified aircraft and one not radar-identified that is in transit from oceanic airspace or 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, 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 (visual or vertical) 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.

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

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

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

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

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

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

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

d. ERAM:

1. Below FL 600- *5 miles.*

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

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

(a) Significant operational advantages can be obtained.

(b) Within 40 NM of the preferred sensor or within 60 NM of the preferred sensor when using ASR–9 with Mode S or ASR–11 MSSR Beacon and within the 3 NM separation area.

(c) The preferred sensor is providing reliable beacon targets.

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

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

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

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

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

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

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

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

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

e. MEARTS Mosaic Mode:

1. Below FL 600- *5 miles.*

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

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

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

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

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

(b) Significant operational advantages can be obtained.

(c) Within 40 NM of the sensor or within 60 NM of the sensor when using ASR–9 with Mode S or ASR–11 MSSR Beacon and within the 3 NM separation area.

(d) Up to and including FL230.

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

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

(a) Up to and including FL230 within 40 miles from the antenna or within 60 NM when using ASR–9 with Mode S or ASR–11 MSSR Beacon and targets are from the adapted sensor.

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

(c) Significant operational advantages can be obtained.

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

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

f. STARS Multi−Sensor Mode:

NOTE−

1. *In Multi−Sensor Mode, STARS displays targets as filled and unfilled boxes, depending upon the target's distance from the radar site providing the data. Since there is presently no way to identify which specific site is providing data for any given target, utilize separation standards for targets 40 or more miles from the antenna.*

2. *When operating in STARS Single Sensor Mode, if TRK appears in the data block, handle in accordance with Paragraph 5−3−7, Identification Status, subpara b, and take appropriate steps to establish nonradar separation.*

3. *TRK appears in the data block whenever the aircraft is being tracked by a radar site other than the radar currently selected. Current equipment limitations preclude a target from being displayed in the single sensor mode; however, a position symbol and data block, including altitude information, will still be displayed. Therefore, low altitude alerts must be provided in accordance with Paragraph 2−1−6 , Safety Alert.*

WAKE TURBULENCE APPLICATION

g. Separate aircraft operating directly behind or following an aircraft conducting an instrument approach by the minima specified and in accordance with the following:

NOTE−

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

1. When operating within 2,500 feet of the flight path of the leading aircraft over the surface of the earth and less than 1,000 feet below:

(a) *TERMINAL.* Behind super:

(1) Heavy - *6 miles.*

(2) Large - *7 miles.*

(3) Small - *8 miles.*

(b) *EN ROUTE.* Behind super - *5 miles,* unless the super is operating at or below FL240 and below 250 knots, then:

(1) Heavy - *6 miles.*

(2) Large - *7 miles.*

(3) Small - *8 miles.*

(c) Behind heavy:

(1) Heavy - *4 miles.*

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

2. Separate small aircraft behind a B757 by *4 miles* when operating within 2,500 feet of the flight path of the leading aircraft over the surface of the earth and/or less than 500 feet below.

3. *TERMINAL.* When departing parallel runways separated by less than 2,500 feet, the 2,500 feet requirement in subparagraph 2 is not required when a small departs the parallel runway behind a B757. Issue a wake turbulence cautionary advisory and instructions that will establish lateral separation in accordance with subparagraph 2. Do not issue instructions that will allow the small to pass behind the B757.

NOTE−

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

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

WAKE TURBULENCE APPLICATION

h. In addition to subpara g, separate an aircraft landing behind another aircraft on the same runway, or one making a touch-and-go, stop-and-go, or low approach by ensuring the following minima will exist at the time the preceding aircraft is over the landing threshold:

NOTE−

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

1. Small behind large− *4 miles*.

2. Small behind heavy− *6 miles.*

If the landing threshold cannot be determined, apply the above minima as constant or increasing at the

closest point that can be determined prior to the landing threshold.

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

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

1. The leading aircraft's weight class is the same or less than the trailing aircraft;

2. Super and heavy aircraft are permitted to participate in the separation reduction as the trailing aircraft only;

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

4. CTRDs are operational and used for quick glance references;

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

5. Turnoff points are visible from the control tower.

REFERENCE–
FAA Order JO 7110.65, Para 2–1–19 , Wake Turbulence.
FAA Order JO 7110.65, Para 3–9–6 , Same Runway Separation.
FAA Order JO 7110.65, Para 5–5–7 , Passing or Diverging.
FAA Order JO 7110.65, Para 5–5–9 , Separation from Obstructions.
FAA Order JO 7110.65, Para 5–8–3 , Successive or Simultaneous Departures.
FAA Order JO 7110.65, Para 5–9–5 , Approach Separation Responsibility.
FAA Order JO 7110.65, Para 7–6–7 , Sequencing.
FAA Order JO 7110.65, Para 7–7–3 , Separation.
FAA Order JO 7110.65 Para 7–8–3 , Separation.
FAA Order JO 7210.3, Para 10–4–11 , Reduced Separation on Final.

5–5–5. VERTICAL APPLICATION

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

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

REFERENCE–
FAA Order JO 7110.65, Para 4–5–1 , Vertical Separation Minima.
FAA Order JO 7110.65, Para 5–2–18 , Validation of Mode C Readout.
FAA Order JO 7110.65, Para 7–7–3 , Separation.
FAA Order JO 7110.65, Para 7–8–3 , Separation.
FAA Order JO 7110.65, Para 7–9–4 , Separation.

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

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

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

REFERENCE–
FAA Order JO 7110.65, Para 2–1–3 , Procedural Preference.
FAA Order JO 7110.65, Para 4–5–1 , Vertical Separation Minima.
FAA Order JO 7110.65, Para 5–2–18 , Validation of Mode C Readout.
FAA Order JO 7110.65, Para 6–6–1 , Application.

5–5–6. EXCEPTIONS

a. Do not use Mode C to effect vertical separation with an aircraft on a cruise clearance, contact approach, or as specified in Paragraph 5–15–4, System Requirements, subpara f3.

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

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

1. Severe turbulence is reported.

2. Aircraft are conducting military aerial refueling.

REFERENCE–
FAA Order JO 7110.65, Para 9–2–14 , Military Aerial Refueling.

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

5–5–7. PASSING OR DIVERGING

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

1. Single Site ASR or FUSION Mode

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

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

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

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

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

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

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

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

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

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

NOTE–
Apply en route separation rules when using multi–sensor mode.

b. *EN ROUTE.* Vertical separation between aircraft may be discontinued when they are on opposite courses as defined in Paragraph 1–2–2, Course Definitions; and

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

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

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

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

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

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

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

(If the answer is in the affirmative):

"Report passing the traffic."

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

5–5–8. ADDITIONAL SEPARATION FOR FORMATION FLIGHTS

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

a. Separate a standard formation flight by adding 1 mile to the appropriate radar separation minima.

REFERENCE–
FAA Order JO 7110.65, Para 2–1–13 , Formation Flights.
FAA Order JO 7110.65, Para 5–5–1 , Application.
FAA Order JO 7110.65, Para 7–7–3 , Separation.
P/CG Term– Formation Flight.

b. Separate two standard formation flights from each other by adding 2 miles to the appropriate separation minima.

Section 6. Vectoring

5–6–1. APPLICATION

Vector aircraft:

a. In controlled airspace for separation, safety, noise abatement, operational advantage, confidence maneuver, or when a pilot requests.

b. In Class G airspace only upon pilot request and as an additional service.

c. At or above the MVA or the minimum IFR altitude except as authorized for radar approaches, special VFR, VFR operations, or by Paragraph 5–6–3, Vectors Below Minimum Altitude.

NOTE–
VFR aircraft not at an altitude assigned by ATC may be vectored at any altitude. It is the responsibility of the pilot to comply with the applicable parts of CFR Title 14.

REFERENCE–
FAA Order JO 7110.65, Para 4–5–6, Minimum En Route Altitudes.
FAA Order JO 7110.65, Para 7–5–2, Priority.
FAA Order JO 7110.65, Para 7–5–4, Altitude Assignment.
FAA Order JO 7110.65, Para 7–7–5, Altitude Assignments.
14 CFR Section 91.119, Minimum Safe Altitudes: General.

d. In airspace for which you have control jurisdiction, unless otherwise coordinated.

e. So as to permit it to resume its own navigation within radar coverage.

f. Operating special VFR only within Class B, Class C, Class D, or Class E surface areas.

g. Operating VFR at those locations where a special program is established, or when a pilot requests, or you suggest and the pilot concurs.

REFERENCE–
FAA Order JO 7110.65, Para 4–4–1, Route Use.
FAA Order JO 7110.65, Para 7–2–1, Visual Separation.
FAA Order JO 7110.65, Para 7–5–3, Separation.
FAA Order JO 7110.65, Para 7–6–1, Application.
FAA Order JO 7110.65, Para 9–4–4, Separation Minima.
FAA Order JO 7210.3, Chapter 12, Section 1, Terminal VFR Radar Services.

5–6–2. METHODS

a. Vector aircraft by specifying:

1. Direction of turn, if appropriate, and magnetic heading to be flown, or

PHRASEOLOGY–
TURN LEFT/RIGHT HEADING (degrees).

FLY HEADING (degrees).

FLY PRESENT HEADING.

DEPART (fix) HEADING (degrees).

2. The number of degrees, in group form, to turn and the direction of turn, or

PHRASEOLOGY–
TURN (number of degrees) DEGREES LEFT/RIGHT.

3. For NO-GYRO procedures, the type of vector, direction of turn, and when to stop turn.

PHRASEOLOGY–
THIS WILL BE A NO-GYRO VECTOR,

TURN LEFT/RIGHT.

STOP TURN.

b. When initiating a vector, advise the pilot of the purpose, and if appropriate, what to expect when radar navigational guidance is terminated.

PHRASEOLOGY–
VECTOR TO (fix or airway).

VECTOR TO INTERCEPT (name of NAVAID) (specified) RADIAL.

VECTOR FOR SPACING.

(if appropriate) EXPECT DIRECT (NAVAID, waypoint, fix)

VECTOR TO FINAL APPROACH COURSE,

or if the pilot does not have knowledge of the type of approach,

VECTOR TO (approach name) FINAL APPROACH COURSE.

NOTE–
Determine optimum routing based on factors such as wind, weather, traffic, pilot requests, noise abatement, adjacent sector requirement, and letters of agreement.

c. When vectoring or approving course deviations, assign an altitude to maintain when:

1. The vector or approved deviation is off an assigned procedure which contains altitude instructions, i.e., instrument approach, etc.

2. The previously issued clearance included crossing restrictions.

REFERENCE–
FAA Order JO 7110.65, Para 4–2–5, Route or Altitude Amendments.

3. The vector or approved deviation is off an assigned procedure that contains published altitude restrictions, i.e., SID, STAR, and a clearance to Climb Via/Descend Via has been issued.

d. When vectoring or approving an aircraft to deviate off of a procedure that includes published altitude restrictions, advise the pilot if you intend on clearing the aircraft to resume the procedure.

PHRASEOLOGY–
FLY HEADING (degrees), MAINTAIN (altitude), EXPECT TO RESUME (SID, STAR, etc.).

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

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

e. Provide radar navigational guidance until the aircraft is:

1. Established within the airspace to be protected for the nonradar route to be flown, or

2. On a heading that will, within a reasonable distance, intercept the nonradar route to be flown, and

3. Informed of its position unless the aircraft is RNAV, FMS, or DME equipped and being vectored toward a VORTAC/TACAN or waypoint and within the service volume of the NAVAID.

PHRASEOLOGY–
(Position with respect to course/fix along route), RESUME OWN NAVIGATION,

or

FLY HEADING (degrees). WHEN ABLE, PROCEED DIRECT (name of fix),

or
RESUME (SID/STAR/transition/procedure).

REFERENCE–
FAA Order JO 7110.65, Chapter 4, Section 1, NAVAID Use Limitations.
FAA Order JO 7110.65,Paragraph 4–5–7, Altitude Information

f. Aircraft instructed to resume a procedure which contains published crossing restrictions (SID/STAR) must be issued/reissued all applicable restrictions or be instructed to Climb Via/Descend Via.

PHRASEOLOGY–
CLEARED DIRECT (NAVAID, fix, waypoint) CROSS (NAVAID, fix, waypoint) AT/AT OR ABOVE/AT OR BELOW (altitude), then CLIMB VIA/DESCEND VIA (SID/STAR)

EXAMPLE–
"Cleared direct Luxor, then descend via the Ksino One arrival."
"Cleared direct HITME, cross HITME at or above one one thousand, then climb via the Boach Five departure."

g. Aircraft may not be vectored off an Obstacle Departure Procedure (ODP), or issued an altitude lower than published altitude on an ODP, until at or above the MVA/MIA, at which time the ODP is cancelled.

NOTE–
Once an aircraft has been vectored off an Obstacle Departure Procedure, the procedure is cancelled and ATC cannot clear the aircraft to resume the ODP.

REFERENCE–
P/CG– Obstacle Departure Procedure

h. Aircraft vectored off an RNAV route must be recleared to the next waypoint or as requested by the pilot.

i. When flight data processing is available, update the route of flight in the computer unless an operational advantage is gained and coordination is accomplished.

j. Inform the pilot when a vector will take the aircraft across a previously assigned nonradar route.

PHRASEOLOGY–
EXPECT VECTOR ACROSS (NAVAID radial) (airway/route/course) FOR (purpose).

REFERENCE–
FAA Order JO 7110.65, Para 7–6–1, Application.

5–6–3. VECTORS BELOW MINIMUM ALTITUDE

a. Except in en route automated environments in areas where more than 3 miles separation minima is required, you may vector a departing IFR aircraft, or one executing a missed approach, within 40 miles of

Section 7. Speed Adjustment

5–7–1. APPLICATION

Keep speed adjustments to the minimum necessary to achieve or maintain required or desired spacing. Avoid adjustments requiring alternate decreases and increases. Terminate speed adjustments when no longer needed.

NOTE–
It is the pilot's responsibility and prerogative to refuse speed adjustment that he/she considers excessive or contrary to the aircraft's operating specifications.

a. Consider the following when applying speed control:

1. Determine the interval required and the point at which the interval is to be accomplished.

2. Implement speed adjustment based on the following principles.

(a) Priority of speed adjustment instructions is determined by the relative speed and position of the aircraft involved and the spacing requirement.

(b) Speed adjustments are not achieved instantaneously. Aircraft configuration, altitudes, and speed determine the time and distance required to accomplish the adjustment.

3. Use the following techniques in speed control situations:

(a) Compensate for compression when assigning air speed adjustment in an in-trail situation by using one of the following techniques:

(1) Reduce the trailing aircraft first.

(2) Increase the leading aircraft first.

(b) Assign a specific airspeed if required to maintain spacing.

(c) Allow increased time and distance to achieve speed adjustments in the following situations:

(1) Higher altitudes.

(2) Greater speed.

(3) Clean configurations.

(d) Ensure that aircraft are allowed to operate in a clean configuration as long as circumstances permit.

(e) Keep the number of speed adjustments per aircraft to the minimum required to achieve and maintain spacing.

b. Do not assign speed adjustment to aircraft:

1. At or above FL 390 without pilot consent.

2. Executing a published high altitude instrument approach procedure.

3. In a holding pattern.

REFERENCE–
FAA Order JO 7110.65, Para 4–6–4, Holding Instructions.

4. Inside the final approach fix on final or a point 5 miles from the runway, whichever is closer to the runway.

c. At the time approach clearance or a climb via/descend via clearance is issued, previously assigned speeds must be restated if required.

d. Approach clearances or climb via/descend via clearances cancel any previously assigned speeds. Pilots are expected to make their own speed adjustments to fly the approach, SID, or STAR unless assigned speeds are restated.

NOTE–
Pilots are required to comply with published speed restrictions.

e. If feasible, when issuing speed adjustments to aircraft cleared along a route or procedure that has published speed restrictions, advise aircraft where to resume published speed.

f. Express speed adjustments in terms of knots based on indicated airspeed (IAS) in 5–knot increments. At or above FL 240, speeds may be expressed in terms of Mach numbers in 0.01 increments for turbojet aircraft with Mach meters (i.e., Mach 0.69, 0.70, 0.71, etc.).

NOTE–
1. *Pilots complying with speed adjustment instructions (published or assigned) should maintain a speed within plus or minus 10 knots or 0.02 Mach number of the specified speed.*

2. *When assigning speeds to achieve spacing between aircraft at different altitudes, consider that ground speed*

may vary with altitude. Further speed adjustment may be necessary to attain the desired spacing.

3. *Controllers should anticipate pilots will begin adjusting speed at the minimum distance necessary prior to a published speed restriction so as to cross the waypoint/fix at the published speed. Once at the published speed, controllers should expect pilots will maintain the published speed until additional adjustment is required to comply with further published restrictions or ATC assigned speed restrictions.*

REFERENCE–
FAA Order JO 7110.65, Para 5–7–2, Methods.

5–7–2. METHODS

a. Instruct aircraft to:

1. Maintain present/specific speed.

2. Maintain specified speed or greater/less.

3. Maintain the highest/lowest practical speed.

4. Increase or reduce to a specified speed or by a specified number of knots.

PHRASEOLOGY–
SAY AIRSPEED.

SAY MACH NUMBER.

MAINTAIN PRESENT SPEED.

MAINTAIN (specific speed) KNOTS.

MAINTAIN (specific speed) KNOTS OR GREATER.

DO NOT EXCEED (speed) KNOTS.

MAINTAIN MAXIMUM FORWARD SPEED.

MAINTAIN SLOWEST PRACTICAL SPEED.

INCREASE/REDUCE SPEED:

TO (specified speed in knots),

or

TO MACH (Mach number),

or

(number of knots) KNOTS.

EXAMPLE–
"*Increase speed to Mach point seven two.*"
"Reduce speed to two five zero."
"Reduce speed twenty knots."
"Maintain two eight zero knots."
"Maintain maximum forward speed."

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

2. *Speed restrictions of 250 knots do not apply to aircraft operating beyond 12 NM from the coastline within the U.S. Flight Information Region, in offshore Class E airspace below 10,000 feet MSL. However, in airspace underlying a Class B airspace area designated for an airport, or in a VFR corridor designated through such a Class B airspace area, pilots are expected to comply with the 200 knot speed limit specified in 14 CFR Section 91.117(c). (See 14 CFR Sections 91.117(c) and 91.703.)*

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

b. To obtain pilot concurrence for a speed adjustment at or above FL 390, as required by Paragraph 5–7–1, Application, use the following phraseology.

PHRASEOLOGY–
(Speed adjustment), IF UNABLE ADVISE.

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

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

1. Speed reductions prior to descent.

PHRASEOLOGY–
REDUCE SPEED:

TO (specified speed),

or

(number of knots) KNOTS.

THEN, DESCEND AND MAINTAIN (altitude).

2. Speed reduction following descent.

PHRASEOLOGY–
DESCEND AND MAINTAIN (altitude).

THEN, REDUCE SPEED:

TO (specified speed in knots),

or

TO MACH (Mach number),

or

(number of knots) KNOTS.

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

d. Specify combined speed/altitude fix crossing restrictions.

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

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

REFERENCE–
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.

EXCEPT (if required)

DELETE SPEED RESTRICTIONS.

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

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

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

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

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

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

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

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

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

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

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

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

REFERENCE–
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 CAS (subject to minor variations) are:*
FL 240–0.6
FL 250–0.61
FL 260–0.62
FL 270–0.64
FL 280–0.65
FL 290–0.66.

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

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

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

1. Turbojet aircraft:

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

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

2. Reciprocating and turboprop aircraft:

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

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

d. To departures:

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

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

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

REFERENCE–
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

REFERENCE–
FAA Order JO 7110.65, Para 2–1–19, Wake Turbulence.
FAA Order JO 7110.65, Section 5, Radar Separation, Para 5–5–1, Application.
FAA Order JO 7110.65, Para 7–2–1, Visual Separation.
FAA Order JO 7110.65, Para 5–5–4, Minima.
FAA Order JO 7210.3, Para 2–1–16, Authorization for Separation Services by Towers.

b. When timed approaches are being conducted, the radar controller must maintain the radar separation specified in Paragraph 6–7–5, Interval Minima, until the aircraft is observed to have passed the final approach fix inbound (nonprecision approaches) or the OM or the fix used in lieu of the outer marker (precision approaches) and is within 5 miles of the runway on the final approach course or until visual separation can be provided by the tower.

REFERENCE–
FAA Order JO 7110.65, Para 5–4–6, Receiving Controller Handoff.
FAA Order JO 7110.65, Para 5–9–2, Final Approach Course Interception.
FAA Order JO 7110.65, Para 5–9–6, Parallel Dependent Approaches.
FAA Order JO 7110.65, Para 6–7–2, Approach Sequence.

5–9–6. SIMULTANEOUS DEPENDENT APPROACHES

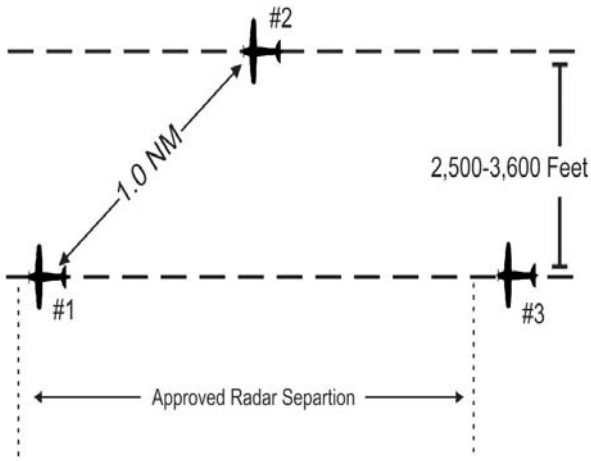
TERMINAL

a. Apply the following minimum separation when conducting simultaneous dependent approaches:

1. Provide a minimum of 1,000 feet vertical or a minimum of 3 miles radar separation between aircraft during turn on.

2. Provide a minimum of 1 mile radar separation diagonally between successive aircraft on adjacent final approach courses when runway centerlines are at least 2,500 feet but no more than 3,600 feet apart.

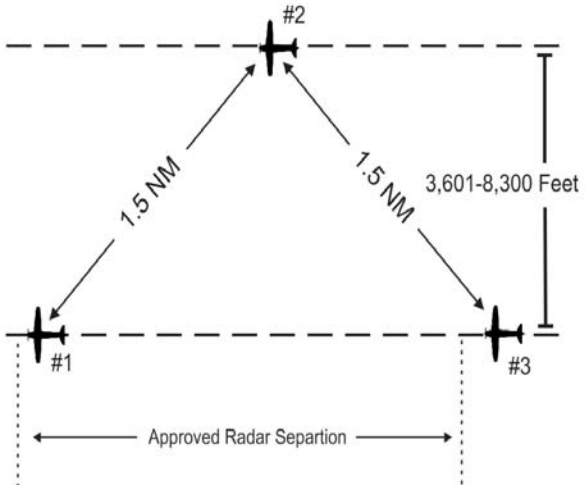
FIG 5–9–4
Simultaneous Dependent Approaches



EXAMPLE–
In FIG 5–9–4, Aircraft 2 is 1.0 mile from Aircraft 1. Approved radar separation must be maintained between Aircraft 1 and Aircraft 3.

3. Provide a minimum of 1.5 miles radar separation diagonally between successive aircraft on adjacent final approach courses when runway centerlines are more than 3,600 feet but no more than 8,300 feet apart.

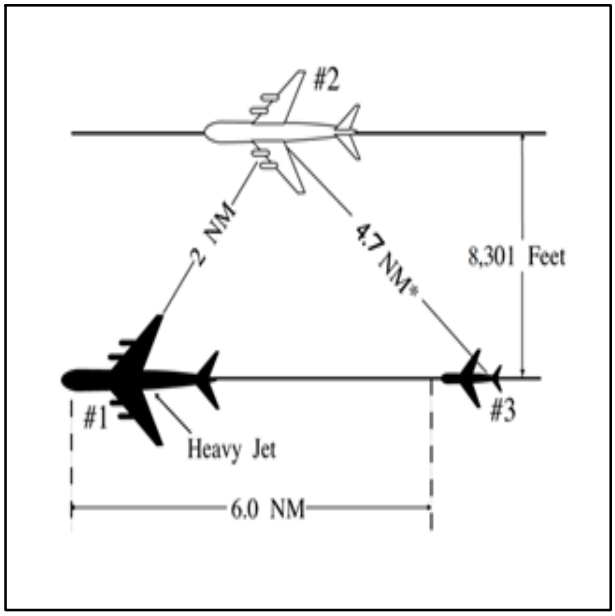
FIG 5–9–5
Simultaneous Dependent Approaches



EXAMPLE–
In FIG 5–9–5, Aircraft 2 is 1.5 miles from Aircraft 1, and Aircraft 3 is 1.5 miles or more from Aircraft 2. Approved radar separation must be maintained between aircraft on the same final.

4. Provide a minimum of 2 miles radar separation diagonally between successive aircraft on adjacent final approach courses where runway centerlines are more than 8,300 feet but no more than 9,000 feet apart.

FIG 5–9–6
Simultaneous Dependent Approaches



EXAMPLE–
*In FIG 5–9–6, Aircraft 2 is 2 miles from heavy Aircraft 1. Aircraft 3 is a small aircraft and is 6 miles from Aircraft 1. *The resultant separation between Aircraft 2 and 3 is at least 4.7 miles.*

5. Provide the minimum approved radar separation between aircraft on the same final approach course.

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

b. The following conditions are required when applying the minimum radar separation on adjacent final approach courses allowed in subparagraph a:

NOTE–
1. *Simultaneous dependent approaches involving an RNAV approach may only be conducted when (GPS) appears in the approach title or a chart note states that GPS is required.*

2. *Simultaneous dependent approaches may only be conducted where instrument approach charts specifically authorize simultaneous approaches to adjacent runways.*

1. Apply this separation standard only after aircraft are established on the parallel final approach course.

2. Straight-in landings will be made.

3. Missed approach procedures do not conflict.

4. Aircraft are informed that approaches to both runways are in use. This information may be provided through the ATIS.

5. Approach control must have the interphone capability of communicating directly with the local controller at locations where separation responsibility has not been delegated to the tower.

NOTE–
The interphone capability is an integral part of this procedure when approach control has the sole separation responsibility.

REFERENCE–
FAA Order JO 7110.65, Para 5–9–5 , Approach Separation Responsibility.
FAA Order JO 7210.3, Para 2–1–16, Authorization for Separation Services by Towers.

c. Consideration should be given to known factors that may in any way affect the safety of the instrument approach phase of flight, such as surface wind direction and velocity, wind shear alerts/reports, severe weather activity, etc. Closely monitor weather activity that could impact the final approach course. Weather conditions in the vicinity of the final approach course may dictate a change of approach in use.

REFERENCE–
FAA Order JO 7110.65, Para 5–9–2 , Final Approach Course Interception.

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

TERMINAL

a. Apply the following minimum separation when conducting simultaneous independent approaches:

1. Provide a minimum of 1,000 feet vertical or a minimum of 3 miles radar separation between aircraft :

(a) during turn–on to parallel final approach, or

(b) until aircraft are established on a published segment of an approach authorized for Established on RNP (EoR) operations.

Chapter 6. Nonradar

Section 1. General

6–1–1. DISTANCE

Use mileage-based (DME and/or ATD) procedures and minima only when direct pilot/controller VHF or UHF voice communications are maintained.

6–1–2. NONRECEIPT OF POSITION REPORT

When a position report affecting separation is not received, take action to obtain the report no later than 5 minutes after the aircraft was estimated over the fix.

REFERENCE–
FAA Order JO 7110.65, Para 9–2–7, IFR Military Training Routes.

6–1–3. DUPLICATE POSITION REPORTS

Do not require an aircraft to make the same position report to more than one facility.

6–1–4. ADJACENT AIRPORT OPERATION

TERMINAL

WAKE TURBULENCE APPLICATION

The ATC facility having control jurisdiction at adjacent airports must separate arriving or departing IFR aircraft on a course that will cross the flight path of an aircraft requiring wake turbulence separation in accordance with the following:

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

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

c. Small behind B757 - *2 minutes.*

FIG 6–1–1
Adjacent Airport Operation –– Arrival

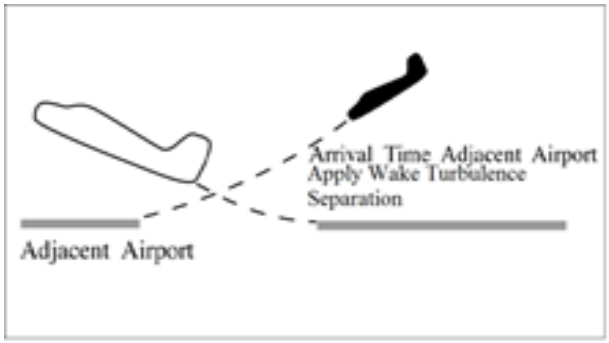
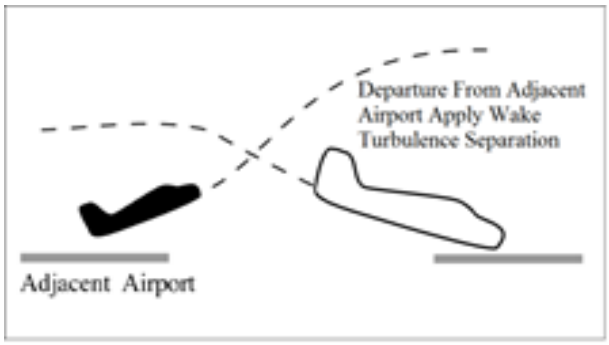


FIG 6–1–2
Adjacent Airport Operation –– Departure



6–1–5. ARRIVAL MINIMA

TERMINAL

WAKE TURBULENCE APPLICATION

a. Separate IFR aircraft landing behind an arriving aircraft to the same runway:

1. Behind super:

(a) Heavy or large – *3 minutes.*

(b) Small – *4 minutes.*

2. Behind heavy:

(a) Heavy or large – *2 minutes.*

(b) Small – *3 minutes.*

3. Small behind B757 – *3 minutes.*

b. Separate IFR aircraft landing behind an arriving aircraft to a parallel runway separated by less than

2,500 feet, or a crossing runway if projected flight paths will cross:

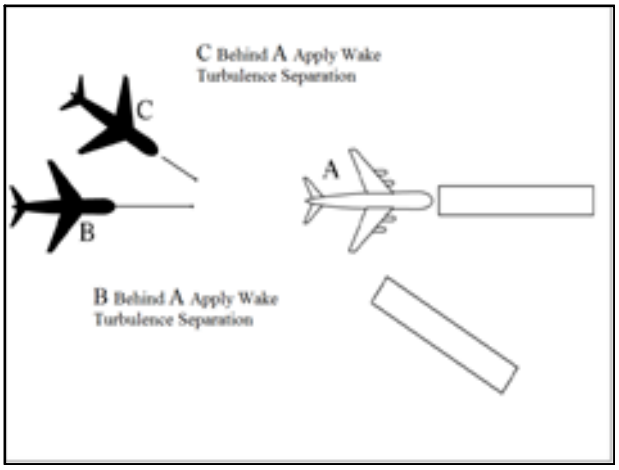
1. Heavy, large, or small behind super – *3 minutes.*

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

3. Small behind B757 – *2 minutes.*

FIG 6–1–3

Arrival Minima Landing Behind an Arriving Aircraft Requiring Wake Turbulence Separation



(b) FL 180 to FL 600 inclusive– *10 miles* on each side of the route.

3. Via degree-distance fixes for RNAV flights above FL 450– *10 miles* on each side of the route.

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

REFERENCE–
FAA Order JO 7110.65, Para 4–4–2, Route Structure Transitions.
FAA Order JO 7110.65, Para 5–5–1, Application.
P/CG Term - Global Navigation Satellite System (GNSS)[ICAO].

4. GNSS-equipped RNAV aircraft provided non-radar separation on random RNAV routes must be cleared via or reported to be established on point-to-point route segments.

(a) The points must be published NAVAIDs, waypoints, fixes, or airports recallable from the aircraft's navigation database. The points must be displayed on controller video maps or depicted on the controller chart displayed at the control position. The maximum distance between points must not exceed 500 miles.

(b) Protect 4 miles either side of the route centerline.

(c) Assigned altitudes must be at or above the highest MIA along the projected route segment being flown, including the protected airspace of that route segment.

EXAMPLE–
A pilot has filed a point–to–point route from XYZ to ABC at 13,000 feet. Departure procedures from the originating airport place the aircraft a significant distance from XYZ; however, the aircraft can establish itself along the route segment from XYZ to ABC. Ascertain when the pilot is established on the point–to–point route segment and at an altitude that meets or exceeds the highest MVA/MIA projected along the route of flight, then issue a clearance. "Verify when you are established on the XYZ to ABC route segment at or above 6,000 feet."

(d) When the GNSS aircraft is being provided radar service and is transitioning to non-radar airspace, provide clearance direct to the named point in non-radar airspace in accordance with subparagraphs a4(a) through (c).

5. If transitioning between two random point–to–point routes, GNSS–equipped aircraft being provided non–radar separation may be cleared via an impromptu route when the following conditions are met:

(a) The impromptu route segment must not exceed the distance to the nearest available recallable fix/waypoint consistent with the direction of flight; and

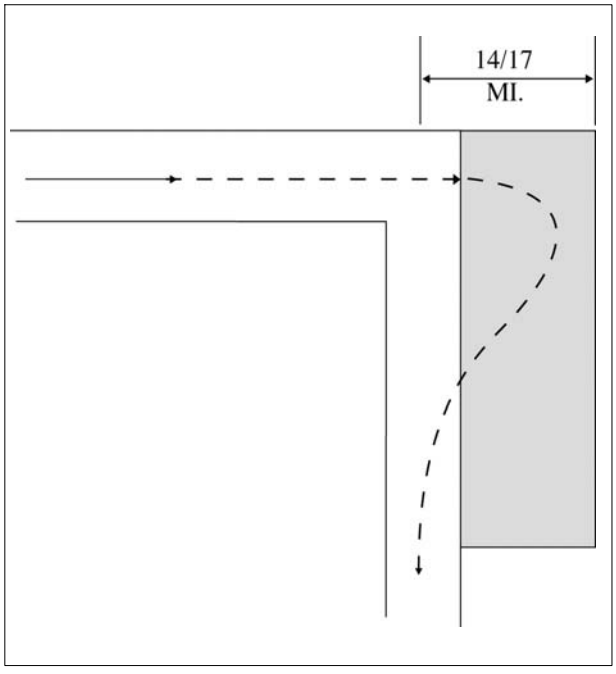
(b) Assigned altitudes must be at or above the highest MIA along the projected route segment being flown; and

(c) Aircraft conducting the impromptu route must be separated vertically from other aircraft until established on the new point–to–point route.

REFERENCE–
FAA Order JO 7110.65, Para 4–4–1, Route Use
FAA Order JO 7110.65, Para 4–4–2, Route Structure Transitions
FAA Order JO 7110.65, Para 5–5–1, Application

b. When course change is 16 degrees through 90 degrees, protect the airspace on the overflown side beginning at the point where the course changes as follows: (See FIG 6–5–5.)

FIG 6–5–5
Overflown Side Minima
16 to 90 Degrees



1. Below FL 180– same as subparas a1 or 2.

2. FL 180 to FL 230 inclusive– *14 miles.*

3. Above FL 230 to FL 600 inclusive– *17 miles.*

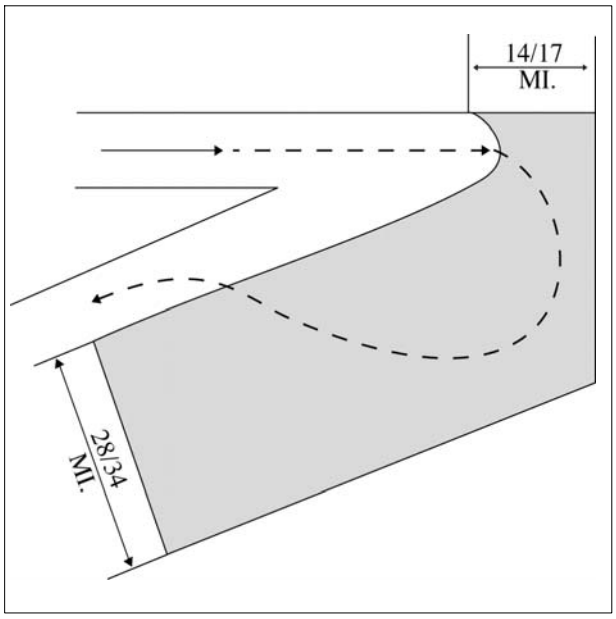
c. When course change is 91 degrees through 180 degrees, protect the airspace on the overflown side beginning at the point where the course changes as follows: (See FIG 6–5–6.)

1. Below FL 180– same as subparas a1 or 2.

2. FL 180 to FL 230 inclusive– *28 miles.*

3. Above FL 230 to FL 600 inclusive– *34 miles*.

FIG 6–5–6
Overflown Side Minima
91 to 180 Degrees

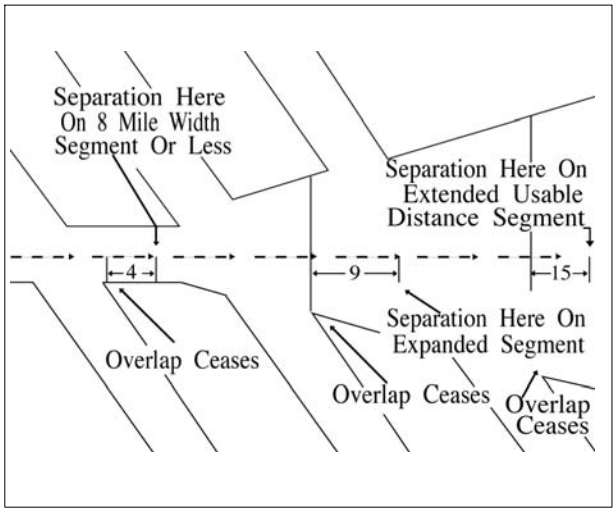


d. After the course changes specified in subparas b or c have been completed and the aircraft is back on course, the appropriate minima in subpara a may be used.

6–5–5. RNAV MINIMA– DIVERGING/ CROSSING COURSES

Consider lateral separation to exist when an RNAV aircraft is beyond the point where the lateral protected airspace of that aircraft has ceased to overlap the lateral protected airspace of another by at least: (See FIG 6–5–7 and FIG 6–5–8.)

FIG 6–5–7
RNAV Minima

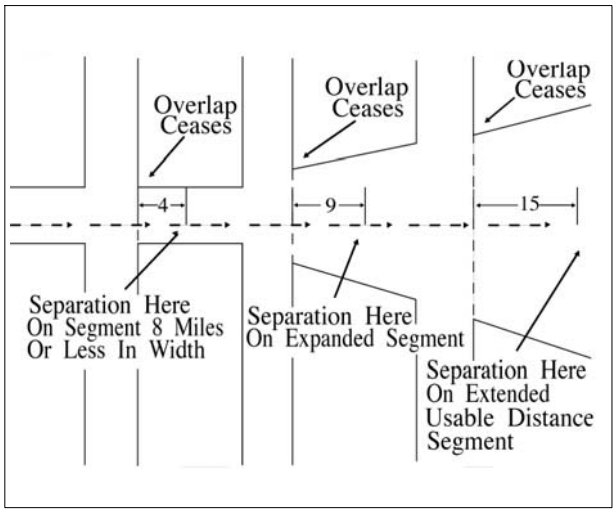


a. When operating along a route that is 8 miles or less in width– *4 miles.*

b. When operating along an expanded route– *9 miles,* except that *15 miles* must be applied along that portion of any route segment requiring extended usable distance limitation beyond 130 miles of the reference facility.

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

FIG 6–5–8
RNAV Minima



Section 2. Visual Separation

7–2–1. VISUAL SEPARATION

Visual separation may be applied when other approved separation is assured before and after the application of visual separation. To ensure that other separation will exist, consider aircraft performance, wake turbulence, closure rate, routes of flight, known weather conditions, and aircraft position. Weather conditions must allow the aircraft to remain within sight until other separation exists. Visual separation is not authorized when the lead aircraft is a super.

REFERENCE–
FAA Order JO 7110.65, Para 2–1–20, Wake Turbulence Cautionary Advisories.
FAA Order JO 7110.65, Para 2–1–21, Traffic Advisories.
FAA Order JO 7110.65, Para 3–1–9, Use of Tower Radar Displays.
FAA Order JO 7110.65, Para 5–9–5, Approach Separation Responsibility.
FAA Order JO 7110.65, Para 7–4–1, Visual Approach.
FAA Order JO 7110.65, Para 7–4–2, Vectors for Visual Approach.
FAA Order JO 7110.65, Para 7–4–4, Approaches to Multiple Runways.
FAA Order JO 7210.3, Para 4–3–2, Appropriate Subjects.
FAA Order JO 7210.3, Para 10–3–9, Visual Separation.
P/CG Term– Visual Approach.
P/CG Term– Visual Separation.

a. TERMINAL. Visual separation may be applied between aircraft up to but not including FL180 under the following conditions:

1. Tower-applied visual separation.

(a) Maintain communication with at least one of the aircraft involved or ensure there is an ability to communicate immediately with applicable military aircraft as prescribed in Paragraph 3–9–3, Departure Control Instructions, subpara a2.

(b) The tower visually observes the aircraft, issues timely traffic advisories, and provides visual separation between the aircraft.

(c) Issue control instructions as necessary to ensure continued separation between the applicable aircraft.

(d) Do not apply visual separation between successive departures when departure routes and/or aircraft performance preclude maintaining separation.

(e) The use of tower-applied visual separation is not authorized when wake turbulence separation is required.

(f) ATCTs at adjacent airports may be authorized to apply visual separation between their traffic and the other facility's traffic. All provisions of FAA Order JO 7110.65, Paragraph 7–2–1a1, still apply.

NOTE–
Additional requirements are listed in FAA Order JO 7210.3, Paragraph 10–3–9, Visual Separation.

2. Pilot-applied visual separation.

(a) Maintain communication with at least one of the aircraft involved and ensure there is an ability to communicate with the other aircraft.

(b) The pilot sees another aircraft and is instructed to maintain visual separation from the aircraft as follows:

(1) Tell the pilot about the other aircraft. Include position, direction, type, and, unless it is obvious, the other aircraft's intention.

(2) Obtain acknowledgment from the pilot that the other aircraft is in sight.

(3) Instruct the pilot to maintain visual separation from that aircraft.

PHRASEOLOGY–
(ACID), TRAFFIC, (clock position and distance), (direction) BOUND, (type of aircraft), (intentions and other relevant information).

If required,
(ACID), REPORT TRAFFIC IN SIGHT or DO YOU HAVE IT IN SIGHT?

If the pilot reports traffic in sight, or the answer is in the affirmative,

(ACID), MAINTAIN VISUAL SEPARATION

NOTE–
Towers must use the procedures contained in Para 3-1-6, Traffic Information, subpara b or c, as appropriate.

(c) If the pilot reports the traffic in sight and will maintain visual separation from it (the pilot must state both), the controller may "approve" the operation instead of restating the instructions.

PHRASEOLOGY–
(ACID), APPROVED.

NOTE–
Pilot-applied visual separation between aircraft is achieved when the controller has instructed the pilot to maintain visual separation and the pilot acknowledges with their call sign or when the controller has approved pilot-initiated visual separation.

REFERENCE–
FAA Order JO 7110.65, Para 5–4–5, Transferring Controller Handoff

(d) If aircraft are on converging courses, inform the other aircraft of the traffic and that visual separation is being applied.

PHRASEOLOGY–
(ACID), TRAFFIC, (clock position and distance), (direction) BOUND, (type of aircraft), HAS YOU IN SIGHT AND WILL MAINTAIN VISUAL SEPARATION.

(e) Advise the pilots if the targets appear likely to merge.

NOTE–
Issue this advisory in conjunction with the instruction to maintain visual separation, the advisory to the other aircraft of the converging course, or thereafter if the controller subsequently becomes aware that the targets are merging.

EXAMPLE–
"Targets appear likely to merge."

(f) Control of aircraft maintaining visual separation may be transferred to an adjacent position/sector/facility. Coordination procedures must be specified in an LOA or facility directive.

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

b. *EN ROUTE.* Visual separation may be used up to but not including FL 180 when the following conditions are met:

1. Direct communication is maintained with one of the aircraft involved and there is an ability to communicate with the other.

2. A pilot sees another aircraft and is instructed to maintain visual separation from it as follows:

(a) Tell the pilot about the other aircraft including position, direction, and type. If it is not obvious, include the other aircraft's intentions.

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

(b) Obtain acknowledgment from the pilot that the other aircraft is in sight.

(c) Instruct the pilot to maintain visual separation from that aircraft.

PHRASEOLOGY–
(ACID), TRAFFIC, (clock position and distance), (direction) BOUND, (type of aircraft), (intentions and other relevant information). If required, (ACID), REPORT TRAFFIC IN SIGHT or DO YOU HAVE IT IN SIGHT? If the pilot reports traffic in sight, or the answer is in the affirmative, (ACID), MAINTAIN VISUAL SEPARATION

(d) If the pilot reports the traffic in sight and will maintain visual separation (the pilot must state both), the controller may "approve" the operation instead of restating the instructions.

PHRASEOLOGY–
(ACID), APPROVED.

NOTE–
Pilot-applied visual separation between aircraft is achieved when the controller has instructed the pilot to maintain visual separation and the pilot acknowledges with their call sign or when the controller has approved pilot-initiated visual separation.

(e) If the aircraft are on converging courses, inform the other aircraft of the traffic and that visual separation is being applied.

(f) Advise the pilots if the radar targets appear likely to merge.

NOTE–
Issue this advisory in conjunction with the instruction to maintain visual separation, the advisory to the other aircraft of the converging course, or thereafter if the controller subsequently becomes aware that the targets are merging.

EXAMPLE–
"Radar targets appear likely to merge."

PHRASEOLOGY–
(ACID) TRAFFIC, (clock position and distance), (direction)–BOUND, (type of aircraft), ON CONVERGING COURSE, HAS YOU IN SIGHT AND WILL MAINTAIN VISUAL SEPARATION.

REFERENCE–
FAA Order JO 7110.65, Para 7–4–1, Visual Approach.
FAA Order JO 7110.65, Para 7–4–2, Vectors for Visual Approach.

(g) Advise the pilots if either aircraft is a heavy.

(h) Issue wake turbulence cautionary advisories in accordance with paragraph 2–1–20.

c. Nonapproach control towers may be authorized to provide visual separation between aircraft within surface areas or designated areas when approved separation is provided before and after the application of visual separation. The nonapproach control tower must apply the procedures contained in subparagraph a1 or a2, when applying visual separation.

PHRASEOLOGY–
VISUAL SEPARATION APPROVED BETWEEN (ACID) AND (ACID),

and for departing aircraft,

(departing/succeeding aircraft) (ACID), RELEASED.

d. If the nonapproach control tower controller states to the radar controller that they will provide visual separation between arrivals, departures/arrivals and/or successive departures, and states the call signs of all aircraft involved, the radar controller can approve the application of visual separation as requested.

PHRASEOLOGY–
VISUAL SEPARATION APPROVED and for departing/succeeding aircraft, (ACIDs) RELEASED

NOTE–
A nonapproach control tower by accepting authorization for visual separation becomes responsible for ensuring that separation. Separation of IFR aircraft before and after application of visual separation is an IFR control function that must be applied by the Approach/Departure/En Route facility. Separation requirements also apply to VFR aircraft when IFR, Class B, Class C or TRSA separation services are required.

REFERENCE–
FAA Order JO 7110.65, Para 4–8–11, Practice Approaches.
FAA Order JO 7110.65, Para 5–6–1, Application.
FAA Order JO 7110.65, Para 7–4–2, Vectors for Visual Approach.
FAA Order JO 7110.65, Para 7–6–1, Application.
FAA Order JO 7110.65, Para 7–7–1, Application.
FAA Order JO 7110.65, Para 7–7–2, Issuance of EFC.
FAA Order JO 7110.65, Para 7–7–3, Separation.
FAA Order JO 7110.65, Para 7–7–4, Helicopter Traffic.
FAA Order JO 7110.65, Para 7–7–5, Altitude Assignments.
FAA Order JO 7110.65, Para 7–7–6, Approach Interval.
FAA Order JO 7110.65, Para 7–7–7, TRSA Departure Information.
FAA Order JO 7110.65, Para 7–8–2, Class C Services.
FAA Order JO 7110.65, Para 7–8–3, Separation.
FAA Order JO 7110.65, Para 7–8–4, Establishing Two–Way Communications.
FAA Order JO 7110.65, Para 7–8–5, Altitude Assignments.
FAA Order JO 7110.65, Para 7–8–6, Exceptions.
FAA Order JO 7110.65, Para 7–9–1, Application.
FAA Order JO 7110.65, Para 7–9–3, Methods.
FAA Order JO 7110.65, Para 7–9–4, Separation.
FAA Order JO 7110.65, Para 7–9–6, Helicopter Traffic.
FAA Order JO 7110.65, Para 7–9–7, Altitude Assignments.

Section 4. Approaches

7–4–1. VISUAL APPROACH

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

a. At airports with an operating control tower, aircraft executing a go–around may be instructed to enter the traffic pattern for landing and an altitude assignment is not required. The pilot is expected to climb to pattern altitude and is required to maintain terrain and obstruction clearance. ATC must maintain applicable separation from other aircraft.

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

REFERENCE–
FAA Order JO 7110.65, Para 2–1–4, Operational Priority.
FAA Order JO 7110.65, Para 2–1–20, Wake Turbulence Cautionary Advisories.
FAA Order JO 7110.65, Para 3–10–2, Forwarding Approach Information by Nonapproach Control Facilities.
FAA Order JO 7110.65, Para 7–2–1, Visual Separation.
FAA Order JO 7110.65, Para 7–4–4, Approaches to Multiple Runways.
FAA Order JO 7210.3, Para 10–3–15, 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:

1. The airport or the runway in sight at airports with operating control towers.

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

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

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

or

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

(and if appropriate)

WEATHER NOT AVAILABLE

or

VERIFY THAT YOU HAVE THE (airport) WEATHER.

REFERENCE–
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, 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.

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. ARTS/STARS functions may be used provided a facility directive or LOA specifies control and communication transfer points.

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

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

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

REFERENCE–
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 to touch unless visual separation is being applied.

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

c. In addition to the requirements in Paragraph 7–2–1, Visual Separation, Paragraph 7–4–1, Visual Approach, Paragraph 7–4–2, Vectors for Visual Approach, and Paragraph 7–4–3, Clearance for Visual Approach, the following conditions apply to visual approaches being conducted simultaneously to parallel, intersecting, and converging runways, as appropriate:

1. Parallel runways separated by less than 2,500 feet. Unless approved separation is provided by ATC, an aircraft must report sighting a preceding aircraft making an approach (instrument or visual) to the adjacent parallel runway. When an aircraft reports another aircraft in sight on the adjacent final approach course and visual separation is applied, controllers

Section 6. Basic Radar Service to VFR Aircraft– Terminal

7–6–1. APPLICATION

a. Basic radar services for VFR aircraft must include:

1. Safety alerts.

2. Traffic advisories.

3. Limited radar vectoring when requested by the pilot.

4. Sequencing at locations where procedures have been established for this purpose and/or when covered by a LOA.

b. Apply the procedures contained in Paragraph 7–1–3, Approach Control Service for VFR Arriving Aircraft, when arriving VFR aircraft are handled by approach control and provide vectoring service in accordance with Chapter 5, Radar, Section 7, Speed Adjustment, in addition to the radar services prescribed in Paragraph 5–6–1, Application, and Paragraph 5–6–2, Methods.

REFERENCE–
FAA Order JO 7110.65, Para 2–1–16, Surface Areas.
FAA Order JO 7110.65, Para 7–6–1, Application.
FAA Order JO 7210.3, Chapter 12, Section 1, Terminal VFR Radar Services.
AIM, Para 4–1–18, Terminal Radar Services for VFR Aircraft.

7–6–2. SERVICE AVAILABILITY

a. Inform aircraft on initial contact whenever this service cannot be provided because of radar outage and apply Paragraph 7–1–3, Approach Control Service for VFR Arriving Aircraft.

b. Provide the service, to the extent possible using an available frequency, if an aircraft desires the service but cannot communicate on the appropriate frequencies. Aircraft which do not desire radar service may be fitted into the landing sequence by the tower. Coordination of these aircraft must be accomplished with the approach control unless a facility directive/LOA prescribes otherwise. Nonparticipating aircraft must, to the extent possible, be given the same landing sequence they would have received had they been sequenced by radar vectors.

c. Radar sequencing to the primary airport, when local procedures have been developed, must be provided unless the pilot states that the service is not requested. Arriving aircraft are assumed to want radar service unless the pilot states "Negative radar service," or makes a similar comment.

7–6–3. INITIAL CONTACT

An aircraft sighted by the local controller at the time of first radio contact may be positioned in the landing sequence after coordination with approach control.

7–6–4. IDENTIFICATION

Identify the aircraft before taking action to position it in the approach sequence.

7–6–5. HOLDING

Hold VFR aircraft over the initial reporting fix or a fix near the airport when holding is required to establish an approach sequence.

REFERENCE–
FAA Order JO 7110.65, Para 7–1–4, Visual Holding of VFR Aircraft.

7–6–6. APPROACH SEQUENCE

Do not assign landing sequence numbers, when establishing aircraft in the approach sequence, unless this responsibility has been delegated in a LOA or facility directive.

NOTE–
The landing sequence is ordinarily established by the tower.

7–6–7. SEQUENCING

a. Establish radar contact before instructing a VFR aircraft to enter the traffic pattern at a specified point or vectoring the aircraft to a position in the approach sequence. Inform the pilot of the aircraft to follow when the integrity of the approach sequence is dependent on following a preceding aircraft. Ensure visual contact is established with the aircraft to follow and provide instruction to follow that aircraft.

PHRASEOLOGY–
FOLLOW (description) (position, if necessary).

b. Direct a VFR aircraft to a point near the airport to hold when a position is not available in the

approach sequence for the runway in use. The aircraft may be vectored to another runway after coordination with the tower.

c. Apply the following procedures to a VFR aircraft being radar sequenced:

1. The provisions of Paragraph 5−5−4, Minima, subparagraphs g and h.

2. When parallel runways are less than 2,500 feet apart, do not permit a super or heavy aircraft to overtake any aircraft, nor a B757 or other large aircraft to overtake a small aircraft established on final within the facility's area of responsibility.

7−6−8. CONTROL TRANSFER

a. Inform the tower of the aircraft's position and then instruct the pilot to contact the tower.

b. The aircraft may be instructed to contact the tower prior to the tower being advised of the aircraft's position provided:

1. The tower advises the aircraft is in sight, and

2. Space is available in the landing sequence.

c. Instruct the pilot to contact the tower at the appropriate point when the approach control ARTS/STARS track data is being displayed on the tower's BRITE/DBRITE/TDW display, the aircraft is tagged by ARTS/STARS, and a facility directive specifies change of communications and control jurisdiction points.

NOTE−
The point at which an aircraft is instructed to contact the tower is determined by prior coordination between the tower and approach control and will vary, depending on the runway in use, weather, etc. The transfer of communications ordinarily occurs at least 5 miles from the runway. The point for the transfer of communications should be a sufficient distance from the airport to permit the tower to properly sequence the aircraft, but not at a distance that could derogate the provision of radar traffic information service.

7−6−9. ABANDONED APPROACH

Instruct the aircraft to change to approach control for sequencing when an aircraft, under tower control, abandons the approach and coordination with approach control reveals no immediate space in the approach sequence.

7−6−10. VFR DEPARTURE INFORMATION

Inform departing VFR aircraft who request radar traffic advisories when to contact departure control and the frequency to use. Provide traffic advisories in accordance with Paragraph 2−1−21, Traffic Advisories, after the departure is radar identified.

NOTE−
Departing aircraft desiring traffic information are expected to request the service and to state their proposed direction of flight upon initial contact with ground control.

7−6−11. TERMINATION OF SERVICE

Basic radar services should be provided to the extent possible, workload permitting. Terminate radar service to aircraft landing at airports other than those where sequencing service is provided at a sufficient distance from the airport to permit the pilot to change to the appropriate frequency for traffic and airport information.

PHRASEOLOGY−
RADAR SERVICE TERMINATED, SQUAWK ONE TWO ZERO ZERO,

or

SQUAWK VFR,

then

CHANGE TO ADVISORY FREQUENCY APPROVED,

or

CONTACT (frequency identification),

or

FREQUENCY CHANGE APPROVED.

Section 9. Class B Service Area– Terminal

7–9–1. APPLICATION

Apply Class B services and procedures within the designated Class B airspace.

a. No person may operate an aircraft within Class B airspace unless:

1. The aircraft has an operable two-way radio capable of communications with ATC on appropriate frequencies for that Class B airspace.

2. The aircraft is equipped with the applicable operating transponder and automatic altitude reporting equipment specified in para (a) of 14 CFR Section 91.215, except as provided in para (d) of that section.

7–9–2. VFR AIRCRAFT IN CLASS B AIRSPACE

a. VFR aircraft must obtain an ATC clearance to operate in Class B airspace.

REFERENCE–
FAA Order JO 7110.65, Para 2–1–18, Operational Requests.
FAA Order JO 7110.65, Para 2–4–22, Airspace Classes.

PHRASEOLOGY–
CLEARED THROUGH/TO ENTER/OUT OF BRAVO AIRSPACE,

and as appropriate,

VIA (route). MAINTAIN (altitude) WHILE IN BRAVO AIRSPACE.

or

CLEARED AS REQUESTED.

(Additional instructions, as necessary.)

REMAIN OUTSIDE BRAVO AIRSPACE. (When necessary, reason and/or additional instructions.)

NOTE–
1. *Assignment of radar headings, routes, or altitudes is based on the provision that a pilot operating in accordance with VFR is expected to advise ATC if compliance will cause violation of any part of the CFR.*

2. *Separation and sequencing for VFR aircraft is dependent upon radar. Efforts should be made to segregate VFR traffic from IFR traffic flows when a radar outage occurs.*

b. Approve/deny requests from VFR aircraft to operate in Class B airspace based on workload, operational limitations and traffic conditions.

c. Inform the pilot when to expect further clearance when VFR aircraft are held either inside or outside Class B airspace.

d. Inform VFR aircraft when leaving Class B airspace.

PHRASEOLOGY–
LEAVING (name) BRAVO AIRSPACE,

and as appropriate,

RESUME OWN NAVIGATION, REMAIN THIS FREQUENCY FOR TRAFFIC ADVISORIES, RADAR SERVICE TERMINATED, SQUAWK ONE TWO ZERO ZERO.

7–9–3. METHODS

a. To the extent practical, clear large turbine engine-powered airplanes to/from the primary airport using altitudes and routes that avoid VFR corridors and airspace below the Class B airspace floor where VFR aircraft are operating.

NOTE–
Pilots operating in accordance with VFR are expected to advise ATC if compliance with assigned altitudes, headings, or routes will cause violation of any part of the CFR.

b. Vector aircraft to remain in Class B airspace after entry. Inform the aircraft when leaving and reentering Class B airspace if it becomes necessary to extend the flight path outside Class B airspace for spacing.

NOTE–
14 CFR Section 91.131 states that "Unless otherwise authorized by ATC, each person operating a large turbine engine-powered airplane to or from a primary airport for which a Class B airspace area is designated must operate at or above the designated floors of the Class B airspace area while within the lateral limits of that area." Such authorization should be the exception rather than the rule.

REFERENCE–
FAA Order JO 7110.65, Para 5–1–10, Deviation Advisories.

c. Aircraft departing controlled airports within Class B airspace will be provided the same services as those aircraft departing the primary airport.

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

7–9–4. SEPARATION

a. Standard IFR services to IFR aircraft.

b. VFR aircraft must be separated from VFR/IFR aircraft/ helicopter/rotorcraft that weigh more than 19,000 pounds and turbojets by no less than:

1. 1 $^{1}/_{2}$ miles separation, or

NOTE–
When ISR is being displayed, discontinue 1 1/2–NM separation.

2. 500 feet vertical separation, or

NOTE–
Apply the provisions of Paragraph 5–5–4, Minima, when wake turbulence separation is required.

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

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

c. For the application of Class Bravo airspace separation requirements, the V-22 Osprey must be treated as a helicopter/rotorcraft.

d. VFR aircraft must be separated from all VFR/IFR aircraft which weigh 19,000 pounds or less by a minimum of:

1. Target resolution, except when ISR is being displayed, or

2. 500 feet vertical separation, or

NOTE–
1. *Apply the provisions of Paragraph 5–5–4, Minima, when wake turbulence separation is required.*

2. *Aircraft weighing 19,000 pounds or less are listed in FAA Order JO 7360.1, Aircraft Type Designators.*

REFERENCE–
FAA Order JO 7360.1, Para 2–2, How Designators are Formulated.

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

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

REFERENCE–
P/CG Term– Lateral Separation.
P/CG Term– Radar Separation.
P/CG Term– Target Resolution.
P/CG Term– Visual Separation.

7–9–5. TRAFFIC ADVISORIES

a. Provide mandatory traffic advisories and safety alerts, between all aircraft.

b. Apply merging target procedures in accordance with Paragraph 5–1–8, Merging Target Procedures.

7–9–6. HELICOPTER TRAFFIC

VFR helicopters need not be separated from VFR or IFR helicopters. Traffic advisories and safety alerts must be issued as appropriate.

7–9–7. ALTITUDE ASSIGNMENTS

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

b. Issue altitude assignments, if required, consistent with the provisions of 14 CFR Section 91.119.

NOTE–
The MSAs are:
1. *Over congested areas, an altitude at least 1,000 feet above the highest obstacle,*
2. *Over other than congested areas, an altitude at least 500 feet above the surface.*

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

c. Aircraft assigned altitudes which are contrary to 14 CFR Section 91.159 must be advised to resume altitudes appropriate for the direction of flight when the altitude assignment is no longer required or when leaving Class B airspace.

PHRASEOLOGY–
RESUME APPROPRIATE VFR ALTITUDES.

7–9–8. APPROACH INTERVAL

The tower must specify the approach interval.

SFRA. Keep flight progress strips on these aircraft until pilot reports landing or exiting the SFRA. If a flight progress strip does not exist for the aircraft, record the call sign, transponder code, entry point (for example, north, northeast, east), and time of entry into the SFRA.

PHRASEOLOGY–
(Call sign), REPORT LANDING OR LEAVING THE SFRA.

5. United States military, law enforcement, and aeromedical flights are exempt from filing flight plans.

b. Establishing two–way Communications.

1. Pilots must establish two–way radio communications with ATC prior to entering the security service area. Responding to a radio call with, "(a/c call sign) standby," establishes radio communications and the pilot may enter the area, provided all other security requirements have been satisfied.

2. Aircraft requesting security services should not normally be held. However, if holding is necessary or workload/traffic conditions prevent immediate provision of ATC security services, inform the pilot to remain outside the designated area until conditions permit the provision of ATC security services. Inform the pilot of the expected length of delay.

PHRASEOLOGY–
(A/C call sign) REMAIN OUTSIDE OF THE (location) AND STANDBY. EXPECT (time) MINUTES DELAY.

c. Termination of Service.

1. If the aircraft is not landing within the designated area, provide security services until the aircraft exits the area and then advise the aircraft to squawk VFR and that frequency change is approved.

PHRASEOLOGY–
SQUAWK VFR, FREQUENCY CHANGE APPROVED.

or

CONTACT (facility identification).

2. When an aircraft is landing at an airport inside the area, instruct the pilot to remain on the assigned transponder code until after landing.

PHRASEOLOGY–
(ACID) REMAIN ON YOUR ASSIGNED TRANSPONDER CODE UNTIL YOU LAND, FREQUENCY CHANGE APPROVED.

3. Using approved handoff functionality, transfer the data blocks of all security tracked aircraft that will enter another sector/position for coordination of aircraft information/location. Upon acceptance of the transferred information, instruct the pilot to contact the next sector/positions' frequency.

9–2–12. SECURITY NOTICE (SECNOT)

Upon receiving notification of a SECNOT, the controller must forward all information on the subject aircraft to the OS/CIC. If information is not known, broadcast call sign on all frequencies and advise the OS/CIC of the response.

REFERENCE–
P/CG Term – Security Notice.
FAA Order JO 7210.3, Chapter 20, Section 9, Security Notice (SECNOT).

9–2–13. LAW ENFORCEMENT OPERATIONS BY CIVIL AND MILITARY ORGANIZATIONS

a. Law enforcement alerts.

1. Aircraft lookouts must not be distributed outside the FAA.

REFERENCE–
FAA Order 1600.29, Law Enforcement Alert Message System.
FAA Order JO 7210.3, Para 2–7–7, Cooperation With Law Enforcement Agencies.

2. Stolen aircraft alerts, including stolen aircraft summaries, may be distributed outside the FAA to: airport offices, air carriers, fixed base operators, and law enforcement agencies.

3. Upon receipt of knowledge concerning an aircraft for which a current law enforcement alert message is held, do the following:

(a) Forward any information on the aircraft to El Paso Intelligence Center (EPIC) and the requester when specified in the message.

(b) Immediately notify the cognizant Transportation Security Administration office by the most rapid means.

(c) DO NOT TAKE ANY OTHER ACTION AFFECTING THE AIRCRAFT, CARGO, CREW, OR PASSENGERS NOT NORMALLY RELATED TO JOB RESPONSIBILITIES.

b. Special law enforcement operations.

1. Special law enforcement operations include inflight identification, surveillance, interdiction and pursuit activities performed in accordance with official civil and/or military mission responsibilities.

2. To facilitate accomplishment of these special missions, exemptions from specified parts of Title 14 of the Code of Federal Regulations have been granted to designated departments and agencies. However, it is each organization's responsibility to apprise ATC of their intent to operate under an authorized exemption before initiating actual operations.

REFERENCE–
FAA Order JO 7210.3, Para 19–3–1, Authorizations and Exemptions from Title 14, Code of Federal Regulations (14 CFR).

3. Additionally, some departments and agencies that perform special missions have been assigned coded identifiers to permit them to apprise ATC of ongoing mission activities and solicit special air traffic assistance.

REFERENCE–
FAA Order 7110.67, Special Aircraft Operations by Law Enforcement/Military Organizations.

NOTE–
As specified in Para 2–1–4, Operational Priority, priority of handling for aircraft operating with coded identifiers will be the same as that afforded to SAR aircraft performing a SAR mission.

c. Assistance to law enforcement aircraft operations.

1. Provide the maximum assistance possible to law enforcement aircraft, when requested, in helping them locate suspect aircraft.

2. Communicate with law enforcement aircraft, when possible and if requested, on a frequency not paired with your normal communications frequencies.

3. Do not allow assistance to law enforcement aircraft to violate any required separation minima.

4. Do not assist VFR law enforcement aircraft in any way that will create a situation which, in your judgment, places the aircraft in unsafe proximity to terrain or other aircraft.

9–2–14. MILITARY AERIAL REFUELING

Authorize aircraft to conduct aerial refueling along published or special tracks at their flight plan altitude, unless otherwise requested.

PHRASEOLOGY–
CLEARED TO CONDUCT REFUELING ALONG (number) TRACK,

or

FROM (fix) TO (fix),

and

MAINTAIN REFUELING LEVEL (altitude),

or

MAINTAIN (altitude),

or

COMMENCING AT (altitude), DESCENDING TO (altitude).

NOTE–
1. *During aerial refueling, tanker aircraft are responsible for receiver aircraft communication with ATC and for their navigation along the track.*

2. *Aerial refueling airspace is not sterilized airspace and other aircraft may transit this airspace provided vertical or lateral separation is provided from refueling aircraft.*

3. *MARSA begins between the tanker and receiver when the tanker and receiver(s) have entered the air refueling airspace and the tanker advises ATC that he/she is accepting MARSA.*

4. *MARSA ends between the tanker and receiver when the tanker advises ATC that the tanker and receiver aircraft are vertically positioned within the air refueling airspace and ATC advises MARSA is terminated.*

REFERENCE–
FAA Order JO 7110.65, Para 2–1–11, Use of MARSA.
FAA Order JO 7110.65, Para 5–5–8, Additional Separation for Formation Flights.
FAA Order JO 7610.4, Chapter 10, Aerial Refueling.

a. Provide radar assistance to the rendezvous for participating aircraft:

1. When requested, and

2. By providing vertical separation prior to MARSA declaration.

b. Do not request receiver aircraft that have been cleared to conduct air refueling and have departed the ARIP to:

1. Make code changes when less than 5 miles from the tanker.

2. Squawk standby when less than 1 mile or more than 3 miles from the tanker.

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:

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.

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

d. Exception. Some prohibited/restricted/warning areas are established for security reasons or to contain hazardous activities not involving aircraft operations. 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.

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 in question. VFR traffic is not prohibited from transiting stationary ALTRVs.

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.

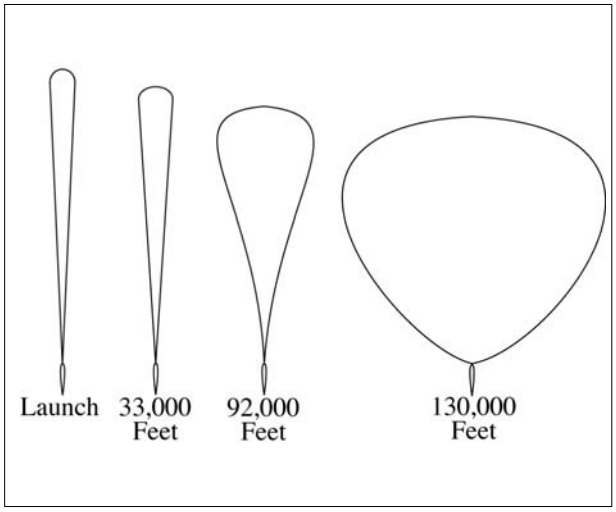
b. If unable to comply with instructions/clearances, clear the aircraft in accordance with Paragrpah 9–3–2, Separation Minima.

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.

Section 6. Unmanned Free Balloons

9–6–1. APPLICATION

FIG 9–6–1
Shapes of 11 Million Cubic Feet Balloon at Various Altitudes



Apply the following procedures, as appropriate, when unmanned free balloons are within airspace for which you have control jurisdiction:

NOTE–
These procedures apply to unmanned free balloons that carry payloads as described in 14 CFR Section 101.1(a)(4). Payloads may weigh several hundred pounds and the physical shape of the balloons change at various altitudes/flight levels. (See FIG 9–6–1.) Balloon and payload ascend at an average rate of 400 feet a minute. Over the descent area, the payload is normally released from the balloon and descends by parachute at a minimum rate of 1,000 feet a minute. The balloon is normally deflated automatically when the payload is released. The operator is required to advise ATC 1 hour in advance of descent in accordance with 14 CFR Section 101.39.

a. Post the balloon flight on flight progress strips along the planned trajectory and revise routing as tracking/position reports require.

NOTE–
The prelaunch notice information should be posted on flight progress strips for planning and operational purposes.

b. Radar flight follow balloons to the extent that equipment capabilities permit. If radar flight following is not possible, tracking should be attempted by communication with the "chase plane," telephone contact with the operator, pilot, or ground observation reports.

NOTE–
Some operators have equipped their balloons with transponder beacons in addition to a radar reflection device or material required by 14 CFR Section 101.35, but at cruise altitude, the balloon's communications equipment and transponder, if so equipped, are operated intermittently to conserve battery energy.

c. With pilot concurrence, provide separation between aircraft and balloons when you are satisfied that the balloon information is sufficiently reliable to provide the service. Do not attempt to separate aircraft from the balloon by using vertical separation unless you have accurate balloon altitude information.

d. Provide traffic advisories to all affected aircraft during initial contact specifying the balloon's known or estimated position, direction of movement, and altitude as "unknown" or "reported," as appropriate.

NOTE–
Unless ATC requires otherwise, operators of unmanned free balloons are required to monitor the course of the balloon and record its position at least every two hours. As required in 14 CFR Section 101.39a, balloon position reports are not forwarded by the operator unless requested by ATC.

PHRASEOLOGY–
UNMANNED FREE BALLOON OVER (name of location),

or

ESTIMATED OVER (name of location), MOVING (direction of movement).

LAST REPORTED ALTITUDE AT (altitude as reported by the operator or determined from pilot report),

or

ALTITUDE UNKNOWN.

e. To transfer flight following responsibility of balloons between facilities or between controllers, forward the following information when available:

REFERENCE–
14 CFR Section 101.37, Notice Requirements.
14 CFR Section 101.39, Balloon Position Reports.

1. Identification and type; e.g., Flight 804 Balloon.

2. Last known position and altitude.

3. General direction of movement and speed.

4. ETA over facility boundary, sector boundary, or other point if believed to be reasonably accurate.

5. Other pertinent information.

6. If in radar contact, physically point out the target to the receiving controller.

7. The name and the telephone number of the location where tracking is being accomplished.

REFERENCE–
FAA Order JO 7110.65, Para 9–6–2, Derelict Balloons.

9–6–2. DERELICT BALLOONS

Balloons become derelict when a moored balloon slips its mooring and becomes a hazard to air navigation or when an unmanned free balloon flight cannot be terminated as planned. When this occurs:

a. In the case of a moored balloon which has slipped its moorings, issue traffic advisories.

b. In the case of an unmanned free balloon, flight follow the balloon and, to the extent possible, provide aircraft under your control separation from the balloon.

c. Forward balloon position information received from pilot reports or derived from radar returns to your supervisor for further dissemination.

d. If radar contact with the balloon is lost, broadcast an advisory to all aircraft operating in the airspace affected by the derelict balloon at 10–minute intervals continuing until the derelict balloon is no longer a factor.

PHRASEOLOGY–
ADVISORY TO ALL AIRCRAFT.

DERELICT BALLOON REPORTED IN THE VICINITY OF (location),

or

ESTIMATED IN VICINITY OF (location),

or

REPORTED OVER (location),

or

RADAR REPORTED OVER (location).

LAST REPORTED ALTITUDE/FLIGHT LEVEL AT (altitude/flight level as reported by operator or pilot report),

or

ALTITUDE/FLIGHT LEVEL UNKNOWN.

e. Transfer flight following responsibility as outlined in Paragraph 9–6–1, Application, subpara e.

REFERENCE–
FAA Order JO 7210.3, Para 19–5–2, Derelict Balloons/Objects. ■

Section 7. Parachute Operations

9–7–1. COORDINATION

Coordinate any pertinent information prior to and at the end of each parachute jump or series of jumps which begins or ends in your area of jurisdiction with other affected ATC facilities/sectors.

NOTE–
14 CFR Section 105.15 prescribes the information required from each person requesting authorization or submitting notification for nonemergency parachute jumping activity.

REFERENCE–
FAA Order JO 7210.3, Para 19–4–1, Nonemergency Parachute Jump Operations.
14 CFR Part 105, Parachute Operations.

9–7–2. CLASS A, CLASS B, AND CLASS C AIRSPACE

a. Authorize parachute operations only within airspace designated for the jumping activity.

b. Separate aircraft, other than those participating in the jump operation, from the airspace authorized for the jumping activity.

c. Impose, as necessary, any conditions and restrictions which in your judgment would promote the safety of the operation.

REFERENCE–
14 CFR Section 105.25, Parachute Operations in Designated Airspace.

9–7–3. CLASS D AIRSPACE

TERMINAL

Handle requests to conduct jump operations in or into Class D airspace in which there is a functioning control tower as follows:

a. Authorize parachute jumping with respect to known or observed traffic.

b. Issue advisory information to the jump aircraft and to nonparticipating aircraft as necessary for the safe conduct of the jump operation.

9–7–4. OTHER CONTROL AIRSPACE

Handle notifications to conduct jump operations in other Class E airspace as follows:

a. Issue a traffic advisory to the jump aircraft before the jump. Include aircraft type, altitude, and direction of flight of all known traffic which will transit the airspace within which the jump will be conducted.

NOTE–
14 CFR Section 105.13, Radio Equipment and Use Requirements, prescribes that, except when otherwise authorized by ATC, parachute jumping is not allowed in or into Class E airspace unless radio communications have been established between the aircraft and the FAA ATC facility having jurisdiction over the affected airspace of the first intended exit altitude at least 5 minutes before the jumping activity is to begin for the purpose of receiving information in the aircraft about known air traffic in the vicinity of the jump aircraft.

b. Issue advisories to all known aircraft which will transit the airspace within which the jump operations will be conducted. Advisories must consist of the location, time, duration, and altitude from which the jump will be made.

c. When time or numbers of aircraft make individual transmissions impractical, advisories to nonparticipating aircraft may be broadcast on appropriate control frequencies, or when available, the ATIS broadcast.

d. When requested by the pilot and to the extent possible, assist nonparticipating aircraft to avoid the airspace within which the jump will be conducted.

Chapter 10. Emergencies

Section 1. General

10–1–1. EMERGENCY DETERMINATIONS

a. An emergency can be either a *Distress* or an *Urgency* condition as defined in the "Pilot/Controller Glossary."

b. A pilot who encounters a *Distress* condition should declare an emergency by beginning the initial communication with the word "Mayday," preferably repeated three times. For an *Urgency* condition, the word "Pan-Pan" should be used in the same manner.

c. If the words "Mayday" or "Pan-Pan" are not used and you are in doubt that a situation constitutes an emergency or potential emergency, handle it as though it were an emergency.

d. Because of the infinite variety of possible emergency situations, specific procedures cannot be prescribed. However, when you believe an emergency exists or is imminent, select and pursue a course of action which appears to be most appropriate under the circumstances and which most nearly conforms to the instructions in this manual.

REFERENCE–
FAA Order JO 7110.65, Para 9–2–7, IFR Military Training Routes.

10–1–2. OBTAINING INFORMATION

Obtain enough information to handle the emergency intelligently. Base your decision as to what type of assistance is needed on information and requests received from the pilot because he/she is authorized by 14 CFR Part 91 to determine a course of action.

10–1–3. PROVIDING ASSISTANCE

Provide maximum assistance to aircraft in distress. Enlist the services of available radar facilities operated by the FAA, the military services, and the Federal Communications Commission, as well as their emergency services and facilities, when the pilot requests or when you deem necessary.

REFERENCE–
FAA Order JO 7110.65, Para 2–1–4, Operational Priority.

10–1–4. RESPONSIBILITY

a. If you are in communication with an aircraft in distress, handle the emergency and coordinate and direct the activities of assisting facilities. Transfer this responsibility to another facility only when you feel better handling of the emergency will result.

b. When you receive information about an aircraft in distress, forward detailed data to the center in whose area the emergency exists.

NOTE–
1. *Centers serve as the central points for collecting information, for coordinating with SAR, and for conducting a communications search by distributing any necessary ALNOTs concerning:*

a. *Overdue or missing IFR aircraft.*

b. *Aircraft in an emergency situation occurring in their respective area.*

c. *Aircraft on a combination VFR/IFR or an airfiled IFR flight plan and 30 minutes have passed since the pilot requested IFR clearance and neither communication nor radar contact can be established with it. For SAR purposes, these aircraft are treated the same as IFR aircraft.*

d. *Overdue or missing aircraft which have been authorized to operate in accordance with special VFR clearances.*

2. *Notifying the center about a VFR aircraft emergency allows provision of IFR separation if considered necessary.*

REFERENCE–
FAA Order JO 7110.65, Para 10–2–5, Emergency Situations.
FAA Order JO 7110.65, Para 10–3–2, Information to be Forwarded to ARTCC.
FAA Order JO 7110.65, Para 10–3–3, Information to be Forwarded to RCC.

c. If the aircraft involved is operated by a foreign air carrier, notify the center serving the departure or destination point, when either point is within the U.S., for relay to the operator of the aircraft.

d. The ARTCC must be responsible for receiving and relaying all pertinent ELT signal information to the appropriate authorities.

REFERENCE–
FAA Order JO 7110.65, Para 10–2–10, Emergency Locator Transmitter (ELT) Signals.

e. When consideration is given to the need to escort an aircraft in distress, evaluate the close formation required by both aircraft. Special consideration should be given if the maneuver takes the aircraft through the clouds.

f. Before a determination is made to have an aircraft in distress be escorted by another aircraft, ask the pilots if they are familiar with and capable of formation flight.

1. Do not allow aircraft to join up in formation during emergency conditions, unless:

(a) The pilots involved are familiar with and capable of formation flight.

(b) They can communicate with one another, and have visual contact with each other.

2. If there is a need for aircraft that are not designated as search and rescue aircraft to get closer to one another than radar separation standards allow, the maneuver must be accomplished, visually, by the aircraft involved.

10–1–5. COORDINATION

Coordinate efforts to the extent possible to assist any aircraft believed overdue, lost, or in emergency status.

10–1–6. AIRPORT GROUND EMERGENCY

TERMINAL

a. When an emergency occurs on the airport proper, control other air and ground traffic to avoid conflicts in the area where the emergency is being handled. This also applies when routes within the airport proper are required for movement of local emergency equipment going to or from an emergency which occurs outside the airport proper.

NOTE–
Aircraft operated in proximity to accident or other emergency or disaster locations may cause hindrances to airborne and surface rescue or relief operations. Congestion, distraction or other effects, such as wake turbulence from nearby airplanes and helicopters, could prevent or delay proper execution of these operations.

REFERENCE–
FAA Order JO 7210.3, Chapter 20, Temporary Flight Restrictions.
14 CFR Section 91.137, Temporary Flight Restrictions.

b. Workload permitting, monitor the progress of emergency vehicles responding to a situation. If necessary, provide available information to assist responders in finding the accident/incident scene.

10–1–7. INFLIGHT EMERGENCIES INVOLVING MILITARY FIGHTER-TYPE AIRCRAFT

a. The design and complexity of military fighter-type aircraft places an extremely high workload on the pilot during an inflight emergency. The pilot's full attention is required to maintain control of the aircraft. Therefore, radio frequency and transponder code changes should be avoided and radio transmissions held to a minimum, especially when the aircraft experiencing the emergency is at low altitude.

b. Pilots of military fighter–type aircraft, normally single engine, experiencing or anticipating loss of engine power or control may execute a flameout pattern in an emergency situation. Circumstances may dictate that the pilot, depending on the position and nature of the emergency, modify the pattern based on actual emergency recovery requirements.

c. Military airfields with an assigned flying mission may conduct practice emergency approaches. Participating units maintain specific procedures for conducting these operations.

REFERENCE–
FAA Order JO 7110.65, Para 3–10–13, Simulated Flameout (SFO) Approaches/Emergency Landing Pattern (ELP) Operations/Practice Precautionary Approaches.

remain clear of the suspect aircraft by at least 100 yards if able.

NOTE–
Passenger deplaning may be of paramount importance and must be considered before the aircraft is parked or moved away from service areas. The decision to use ramp facilities rests with the pilot, aircraft operator/airport manager.

c. If you are unable to inform the suspect aircraft of a bomb threat or if you lose contact with the aircraft, advise your supervisor and relay pertinent details to other sectors or facilities as deemed necessary.

d. When a pilot reports the discovery of a bomb or suspected bomb on an aircraft which is airborne or on the ground, determine the pilot's intentions and comply with his/her requests in so far as possible. Take all of the actions discussed in the preceding paragraphs which may be appropriate under the existing circumstances.

e. The handling of aircraft when a hijacker has or is suspected of having a bomb requires special considerations. Be responsive to the pilot's requests and notify supervisory personnel. Apply hijacking procedures and offer assistance to the pilot according to the preceding paragraphs, if needed.

10–2–12. EXPLOSIVE DETECTION K–9 TEAMS

Take the following actions should you receive an aircraft request for the location of the nearest explosive detection K–9 team.

REFERENCE–
FAA Order JO 7210.3, Para 2–1–12, Explosives Detection K–9 Teams.

a. Obtain the aircraft identification and position and advise your supervisor of the pilot request.

b. When you receive the nearest location of the explosive detection K–9 team, relay the information to the pilot.

c. If the aircraft wishes to divert to the airport location provided, obtain an estimated arrival time from the pilot and advise your supervisor.

10–2–13. MANPADS ALERT

When a threat or attack from Man–Portable Air Defense Systems (MANPADS) is determined to be real, notify and advise aircraft as follows:

a. Do not withhold landing clearance. To the extent possible, issue information on MANPADS threats, confirmed attacks, or post–event activities in time for it to be useful to the pilot. The pilot or parent company will determine the pilot's actions.

b. MANPADS information will be disseminated via the ATIS and/or controller–to–pilot transmissions.

c. Disseminate via controller–to–pilot transmission until the appropriate MANPADS information is broadcast via the ATIS and pilots indicate they have received the appropriate ATIS code. MANPADS information will include nature and location of threat or incident, whether reported or observed and by whom, time (if known), and when transmitting to an individual aircraft, a request for pilot's intentions.

PHRASEOLOGY–
ATTENTION (aircraft identification), MANPADS ALERT. EXERCISE EXTREME CAUTION. MANPADS THREAT/ATTACK/POST–EVENT ACTIVITY OBSERVED/REPORTED BY (reporting agency) (location) AT (time, if known). (When transmitting to an individual aircraft) SAY INTENTIONS.

EXAMPLE–
"Attention Eastern Four Seventeen, MANPADS alert. Exercise extreme caution. MANPADS threat reported by TSA, LaGuardia vicinity. Say intentions."

"Attention all aircraft, MANPADS alert. Exercise extreme caution. MANPADS post–event activity observed by tower south of airport at two–one–zero–zero Zulu."

d. Report MANPADS threat/attack/post–event activity via the ATIS and/or controller–to–pilot transmissions until notified otherwise by the Domestic Events Network (DEN) Air Traffic Security Coordinator (ATSC).

REFERENCE–
FAA Order JO 7110.65, Para 2–9–3, Content.
FAA Order JO 7210.3, Para 2–1–10, Handling MANPADS Incidents.
FAA Order JO 7610.4, Para 16-1-3, Responsibilities.

10–2–14. UNAUTHORIZED LASER ILLUMINATION OF AIRCRAFT

a. When a laser event is reported to an air traffic facility, broadcast on all appropriate frequencies a general caution warning every five minutes for 20 minutes following the last report.

PHRASEOLOGY–
UNAUTHORIZED LASER ILLUMINATION EVENT, (location), (altitude).

b. Terminal facilities must include reported unauthorized laser illumination events on the ATIS

broadcast for one hour following the last report. Include the time, location, altitude, color, and direction of the laser as reported by the pilot.

NOTE–
All personnel can expect aircrews to regard lasers as an inflight emergency and may take evasive action to avoid laser illumination. Additionally, other aircraft may request clearance to avoid the area.

REFERENCE–
FAA Order JO 7110.65, Para 2–9–3, Content.
FAA Order JO 7210.3, Para 2–1–29, Reporting Unauthorized Laser Illumination of Aircraft.

10–2–15. EMERGENCY AIRPORT RECOMMENDATION

a. Consider the following factors when recommending an emergency airport:

1. Remaining fuel in relation to airport distances.

2. Weather conditions.

NOTE–
Depending on the nature of the emergency, certain weather phenomena may deserve weighted consideration when recommending an airport; e.g., a pilot may elect to fly farther to land at an airport with VFR instead of IFR conditions.

3. Airport conditions.

4. NAVAID status.

5. Aircraft type.

6. Pilot's qualifications.

7. Vectoring or homing capability to the emergency airport.

b. Consideration to the provisions of subpara a and Paragraph 10–2–16, Guidance to Emergency Airport, must be used in conjunction with the information derived from any automated emergency airport information source.

10–2–16. GUIDANCE TO EMERGENCY AIRPORT

a. When necessary, use any of the following for guidance to the airport:

1. Radar.

2. Following another aircraft.

3. NAVAIDs.

4. Pilotage by landmarks.

5. Compass headings.

b. Consideration to the provisions of Para 10–2–15, Emergency Airport Recommendation, must be used in conjunction with the information derived from any automated emergency airport information source.

10–2–17. EMERGENCY OBSTRUCTION VIDEO MAP (EOVM)

a. The EOVM is intended to facilitate advisory service to an aircraft in an emergency situation wherein an appropriate terrain/obstacle clearance minimum altitude cannot be maintained. It must only be used and the service provided under the following conditions:

1. The pilot has declared an emergency, or

2. The controller has determined that an emergency condition exists or is imminent because of the pilot's inability to maintain an appropriate terrain/obstacle clearance minimum altitude.

NOTE–
Appropriate terrain/obstacle clearance minimum altitudes may be defined as Minimum IFR Altitude (MIA), Minimum En Route Altitude (MEA), Minimum Obstruction Clearance Altitude (MOCA), or Minimum Vectoring Altitude (MVA).

b. When providing emergency vectoring service, the controller must advise the pilot that any headings issued are emergency advisories intended only to direct the aircraft toward and over an area of lower terrain/obstacle elevation.

NOTE–
Altitudes and obstructions depicted on the EOVM are the actual altitudes and locations of the obstacle/terrain and contain no lateral or vertical buffers for obstruction clearance.

REFERENCE–
FAA Order JO 7210.3, Para 3–9–4, Emergency Obstruction Video Map (EOVM).

10–2–18. VOLCANIC ASH

a. If a volcanic ash cloud is known or forecast to be present:

1. Relay all information available to pilots to ensure that they are aware of the ash cloud's position and altitude(s).

2. Suggest appropriate reroutes to avoid the area of known or forecast ash clouds.

NOTE–
Volcanic ash clouds are not normally detected by airborne or air traffic radar systems.

b. If advised by an aircraft that it has entered a volcanic ash cloud and indicates that a distress situation exists:

1. Consider the aircraft to be in an emergency situation.

2. Do not initiate any climb clearances to turbine–powered aircraft until the aircraft has exited the ash cloud.

3. Do not attempt to provide escape vectors without pilot concurrence.

NOTE–
1. *The recommended escape maneuver is to reverse course and begin a descent (if terrain permits). However, it is the pilot's responsibility to determine the safest escape route from the ash cloud.*

2. *Controllers should be aware of the possibility of complete loss of power to any turbine–powered aircraft that encounters an ash cloud.*

REFERENCE–
FAA Order JO 7110.65, Para 10–2–4, Altitude Change for Improved Reception.
AIM, Para 7–5–9, Flight Operations in Volcanic Ash.

10–2–19. REPORTING DEATH, ILLNESS, OR OTHER PUBLIC HEALTH RISK ON BOARD AIRCRAFT

a. If an air traffic controller receives a report of the death of person, an illness, and/or other public health risk obtain the following information and notify the operations manager in charge (OMIC)/operations supervisor (OS)/controller-in-charge (CIC) as soon as possible.

1. Call sign.

2. Number of suspected cases of illness on board.

3. Nature of the illnesses or other public health risk, if known.

4. Number of persons on board.

5. Number of deaths, if applicable.

6. Pilot's intent (for example, continue to destination or divert).

7. Any request for assistance (for example, needing emergency medical services to meet the aircraft at arrival).

b. The OMIC/OS/CIC must relay the information to the DEN as soon as possible.

NOTE–
1. *If the ATC facility is not actively monitoring the DEN or does not have a dedicated line to the DEN, they must call into the DEN directly via (844) 432–2962 (toll free). Additionally, if this phone number is out of service, alternate back–up bridge phone numbers should be used to contact the DEN: (405) 225–2444 or (844) 663–9723 (toll free).*

2. *Except in extraordinary circumstances, such as a situation requiring ATC intervention, follow-on coordination regarding the incident will not involve ATC frequencies.*

3. *The initial report to a U.S. ATC facility may be passed from a prior ATC facility along the route of flight.*

REFERENCE–
FAA Order JO 7210.3, Para 2-1-32, Reporting Death, Illness, or Other Public Health Risk On Board Aircraft

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

The procedures listed below must be applied and contained in a facility SOP when aircraft deviate into and/or near an active or scheduled SAA:

1. PURPOSE

This appendix prescribes the method and step–by–step process for handling aircraft deviations for weather near active Special Activity Airspace (SAA). The procedures are intended to work in parallel to the preventive procedures outlined in FAA Order JO 7210.3, Facility Operation and Administration, Para 18–2–4a.9, which must be applied when weather is scheduled to impact an active or scheduled SAA.

2. DISCUSSION

a. In all operational facilities, the increase in traffic density and the need for the expeditious movement of traffic without compromising safety have emphasized the importance of handling aircraft deviations for weather in the vicinity of active SAA.

b. The methods, and practices used for handling aircraft requesting or initiating deviations off of their filed route due to weather require time critical responses to the request or in response to observed course deviations. Major issues can occur whenever there is a heavy reliance upon reactive control actions when not performed according to this handbook and the procedures outlined in FAA Order JO 7210.3.

c. Course deviations in areas near active SAA's increase the workload for specialists at the time of their request or observation. The intent of this SOP is to make the handling of the requested deviation or to correct the observed course deviation take place smoothly and to ensure a safe operation with a minimum amount of workload.

3. TERMS

The following terms are important for a complete understanding of this SOP:

a. Status Information Area (SIA). Manual or automatic displays of the current status of position related equipment and operational conditions or procedures.

b. Special Activity Airspace (SAA). Airspace of defined dimensions as an Alert Area, Controlled Firing Area, Military Operations Area (MOA), Prohibited Area, Restricted Area or Warning Area.

c. Deviations. A departure from a current clearance, such as an off course maneuvers to avoid weather or turbulence.

d. Using Agency. The using agency is the military unit or other organization whose activity established the requirement for the SAA. The using agency is responsible for ensuring that:

1. The airspace is used only for its designated purpose.

2. Proper scheduling procedures are established and utilized.

3. The controlling agency is kept informed of changes in scheduled activity, to include the completion of activities for the day.

4. A point of contact is made available to enable the controlling agency to verify schedules, and coordinate access for emergencies, weather diversions, etc.

5. An ATC facility may be designated as the using agency for joint–use areas when that facility has been granted priority for use of the airspace in a joint–use letter of procedure or letter of agreement.

4. PRECAUTIONS

a. Unless clearance of nonparticipating aircraft in/through/adjacent to an active SAA is provided for in a Letter of Agreement or Letter of Procedure, any clearance issued to a nonparticipating aircraft must ensure separation from that SAA by the appropriate minima specified in paragraph 9–3–2.

b. The specialist receiving a request for a route deviation in the vicinity of an active SAA cannot issue a clearance into the active SAA airspace, unless the provisions of Paragraph 9–3–4 of this handbook are applied. The FAA has no jurisdictional authority over the use of non–joint use prohibited/restricted/warning area airspace; therefore, clearance cannot be issued for flight therein without appropriate approval.

c. If the specialist is able to coordinate approval for entry into the SAA from the using agency, a clearance to the aircraft complying with the provisions coordinated with the using agency can be issued; the specialist must notify the OS/CIC of this situation and of subsequent requests or deviations from other aircraft in the same area.

d. Use of Code 7700 for aircraft deviations into active SAA is not encouraged, particularly in situations involving multiple aircraft. Positive identification of aircraft may be lost if an aircraft deviates from flight plan track, particularly in the event of a momentary loss of radar or other interruption in tracking.

5. RESPONSIBILITY:

If a deviation occurs that causes an aircraft to enter SAA the air traffic team must follow the procedures outlined below:

a. Attempt the following:

1. Handoff the aircraft to the Using Agency and transfer communications; or

2. Point Out the aircraft to the Using Agency. The controller must:

(a) Continue to provide safety alerts and traffic advisories, as appropriate, to the affected aircraft.

(b) Continue to coordinate with the Using Agency until the situation is resolved.

(c) Assist the aircraft in exiting the SAA.

3. If the handoff or point out is unsuccessful, the controller must:

(a) If able, advise the Using Agency of the pilot's actions.

(b) Provide safety alerts and traffic advisories, as appropriate.

(c) Assist the aircraft in exiting the SAA as quickly as the weather allows.

(d) Continue to coordinate with the Using Agency until the situation is resolved.

4. If no approval to enter the SAA is given by the using agency:

(a) The specialist must advise the aircraft requesting the course deviation, or deviating toward the SAA, the status of the SAA, and that no clearance can be issued permitting entry into the airspace or;

(b) If an alternative course, which remains clear of the active SAA, is available, offer it to the pilot of the aircraft in question.

5. If the pilot of the nonparticipating aircraft exercises their discretion to deviate from that clearance which ensures separation from an active SAA, and the track of the aircraft will not maintain the required minima from an active SAA, controllers must ascertain if the pilot is exercising emergency authority:

(a) If so, provide assistance and obtain information as provided in Chapter 10, Emergencies.

(b) If not, provide appropriate pilot deviation notification as specified in Paragraph 2–1–26, Pilot Deviation Notification.

PILOT/CONTROLLER GLOSSARY

PURPOSE

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

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

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

EXPLANATION OF CHANGES

d. Terms Added:
ICAO 3LD
ICAO Term ICAO Three Letter Designator
UNCONTROLLED AIRSPACE

e. Terms Deleted:
IFIM
INTERNATIONAL FLIGHT INFORMATION MANUAL

f. Terms Modified:
CLASS G AIRSPACE
INTERNATIONAL CIVIL AVIATION ORGANIZATION [ICAO]
NOTICES TO AIRMEN PUBLICATION

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

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 judgement to ensure that adequate separation exists between all aircraft on runways and taxiways at airports with inadequate runway edge lines or holding position markings.

CLEARANCE–
(See AIR TRAFFIC CLEARANCE.)

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

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

CLEARANCE VOID IF NOT OFF BY (TIME)– Used by ATC to advise an aircraft that the departure clearance is automatically canceled if takeoff is not made prior to a specified time. The pilot must obtain a new clearance or cancel his/her IFR flight plan if not off by the specified time.
(See ICAO term CLEARANCE VOID TIME.)

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

CLEARED APPROACH– ATC authorization for an aircraft to execute any standard or special instrument approach procedure for that airport. Normally, an aircraft will be cleared for a specific instrument approach procedure.
(See CLEARED (Type of) APPROACH.)
(See INSTRUMENT APPROACH PROCEDURE.)
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

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

CLEARED AS FILED– Means the aircraft is cleared to proceed in accordance with the route of flight filed in the flight plan. This clearance does not include the altitude, DP, or DP Transition.
(See REQUEST FULL ROUTE CLEARANCE.)
(Refer to AIM.)

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

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

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

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

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

(Refer to 14 CFR Part 1.)

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

(See SPECIAL VFR CONDITIONS.)

(Refer to AIM.)

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

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

CLOSE PARALLEL RUNWAYS– Two parallel runways whose extended centerlines are separated by less than 4,300 feet and at least 3000 feet (750 feet for SOIA operations) 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 RUNWAY– A runway that is unusable for aircraft operations. Only the airport management/ military operations office can close a runway.

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

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

CLT–

(See CALCULATED LANDING TIME.)

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

(See CHAFF.)

(See GROUND CLUTTER.)

(See PRECIPITATION.)

(See TARGET.)

(See ICAO term RADAR CLUTTER.)

CMNPS–

(See CANADIAN MINIMUM NAVIGATION PERFORMANCE SPECIFICATION AIRSPACE.)

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

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

(See DISCRETE CODE.)

COLD TEMPERATURE COMPENSATION– An action on the part of the pilot to adjust an aircraft's indicated altitude due to the effect of cold temperatures on true altitude above terrain versus aircraft indicated altitude. The amount of compensation required increases at a greater rate with a decrease in temperature and increase in height above the reporting station.

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

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

(See AIR ROUTE TRAFFIC CONTROL CENTER.)

(See RADAR APPROACH CONTROL FACILITY.)

COMMON POINT– A significant point over which two or more aircraft will report passing or have reported passing before proceeding on the same or diverging tracks. To establish/maintain longitudinal separation, a controller may determine a common point not originally in the aircraft's flight plan and then clear the aircraft to fly over the point.

(See SIGNIFICANT POINT.)

COMMON PORTION–

(See COMMON ROUTE.)

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

OR

COMMON ROUTE– Typically the portion of a RNAV STAR between the en route transition end point and the runway transition start point; however, the common route may only consist of a single point that joins the en route and runway transitions.

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

(See DESIGNATED COMMON TRAFFIC ADVISORY FREQUENCY (CTAF) AREA.)

(Refer to AC 90-42, Traffic Advisory Practices at Airports Without Operating Control Towers.)

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

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

(See OUTER MARKER.)

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

(See MIDDLE MARKER.)

(See ICAO term LOCATOR.)

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

COMPLY WITH RESTRICTIONS– An ATC instruction that requires an aircraft being vectored back onto an arrival or departure procedure to comply with all altitude and/or speed restrictions depicted on the procedure. This term may be used in lieu of repeating each remaining restriction that appears on the procedure.

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

(Refer to AIM.)

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

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

CONFIDENCE MANEUVER– A confidence maneuver consists of one or more turns, a climb or descent, or other maneuver to determine if the pilot in command (PIC) is able to receive and comply with ATC instructions.

CONFLICT ALERT– A function of certain air traffic control automated systems designed to alert radar controllers to existing or pending situations between tracked targets (known IFR or VFR aircraft) that require his/her immediate attention/action.

(See MODE C INTRUDER ALERT.)

CONFLICT RESOLUTION– The resolution of potential conflictions between aircraft that are radar

identified and in communication with ATC by ensuring that radar targets do not touch. Pertinent traffic advisories shall be issued when this procedure is applied.

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

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

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

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

CONTACT–

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

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

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

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

(Refer to AIM.)

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

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

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

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

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

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

(See DISCRETE FREQUENCY.)

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

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

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

b. Controlled airspace is also that airspace within which all aircraft operators are subject to certain pilot qualifications, operating rules, and equipment

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

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

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

2. CLASS B– Generally, that airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of airport operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored and consists of a surface area and two or more layers (some Class B 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 nautical mile (NM) radius, a circle with a 10NM radius that extends no lower than 1,200 feet up to 4,000 feet above the airport elevation, and an outer area that is not charted. Each person must establish two-way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while within the airspace. VFR aircraft are only separated from IFR aircraft within the airspace.

(See OUTER AREA.)

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

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

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

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

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

CONTROLLER–

(See AIR TRAFFIC CONTROL SPECIALIST.)

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

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

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

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

CONVECTIVE SIGNIFICANT METEOROLOGICAL INFORMATION–

(See CONVECTIVE SIGMET.)

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

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

COPTER–

(See HELICOPTER.)

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

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

COURSE–

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

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

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

CPDLC–

(See CONTROLLER PILOT DATA LINK COMMUNICATIONS.)

CPL [ICAO]–

(See ICAO term CURRENT FLIGHT PLAN.)

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

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

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

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

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

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

CROSSWIND–

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

(See TRAFFIC PATTERN.)

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

(See CROSSWIND COMPONENT.)

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

CRUISE– Used in an ATC clearance to authorize a pilot to conduct flight at any altitude from the minimum IFR altitude up to and including the altitude specified in the clearance. The pilot may level off at any intermediate altitude within this block of airspace. Climb/descent within the block is to be made at the discretion of the pilot. However, once the pilot starts descent and verbally reports leaving an altitude in the block, he/she may not return to that altitude without additional ATC clearance. Further, it is approval for the pilot to proceed to and make an approach at destination airport and can be used in conjunction with:

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

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

(See INSTRUMENT APPROACH PROCEDURE.)

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

CRUISING ALTITUDE– An altitude or flight level maintained during en route level flight. This is a constant altitude and should not be confused with a cruise clearance.

(See ALTITUDE.)

(See ICAO term CRUISING LEVEL.)

CRUISING LEVEL–

(See CRUISING ALTITUDE.)

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

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

CTA–

(See CONTROLLED TIME OF ARRIVAL.)

(See ICAO term CONTROL AREA.)

CTAF–

(See COMMON TRAFFIC ADVISORY FREQUENCY.)

CTAS–

(See CENTER TRACON AUTOMATION SYSTEM.)

CTOP–

(See COLLABORATIVE TRAJECTORY OPTIONS PROGRAM)

CTRD–

(See CERTIFIED TOWER RADAR DISPLAY.)

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

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

CVFP APPROACH–

(See CHARTED VISUAL FLIGHT PROCEDURE APPROACH.)

CWA–

(See CENTER WEATHER ADVISORY and WEATHER ADVISORY.)

I

I SAY AGAIN– The message will be repeated.

IAF–
(See INITIAL APPROACH FIX.)

IAP–
(See INSTRUMENT APPROACH PROCEDURE.)

IAWP– Initial Approach Waypoint

ICAO–
(See ICAO Term INTERNATIONAL CIVIL AVIATION ORGANIZATION.)

ICAO 3LD–
(See ICAO Term ICAO Three–Letter Designator)

ICAO Three–Letter Designator (3LD)– An ICAO 3LD is an exclusive designator that, when used together with a flight number, becomes the aircraft call sign and provides distinct aircraft identification to air traffic control (ATC). ICAO approves 3LDs to enhance the safety and security of the air traffic system. An ICAO 3LD may be assigned to a company, agency, or organization and is used instead of the aircraft registration number for ATC operational and security purposes. An ICAO 3LD is also used for aircraft identification in the flight plan and associated messages and can be used for domestic and international flights. A telephony associated with an ICAO 3LD is used for radio communication.

ICING– The accumulation of airframe ice.

Types of icing are:

a. Rime Ice– Rough, milky, opaque ice formed by the instantaneous freezing of small supercooled water droplets.

b. Clear Ice– A glossy, clear, or translucent ice formed by the relatively slow freezing or large supercooled water droplets.

c. Mixed– A mixture of clear ice and rime ice.

Intensity of icing:

a. Trace– Ice becomes perceptible. Rate of accumulation is slightly greater than the rate of sublimation. Deicing/anti-icing equipment is not utilized unless encountered for an extended period of time (over 1 hour).

b. Light– The rate of accumulation may create a problem if flight is prolonged in this environment (over 1 hour). Occasional use of deicing/anti-icing equipment removes/prevents accumulation. It does not present a problem if the deicing/anti-icing equipment is used.

c. Moderate– The rate of accumulation is such that even short encounters become potentially hazardous and use of deicing/anti-icing equipment or flight diversion is necessary.

d. Severe– The rate of ice accumulation is such that ice protection systems fail to remove the accumulation of ice, or ice accumulates in locations not normally prone to icing, such as areas aft of protected surfaces and any other areas identified by the manufacturer. Immediate exit from the condition is necessary.

Note:
Severe icing is aircraft dependent, as are the other categories of icing intensity. Severe icing may occur at any ice accumulation rate.

IDENT– A request for a pilot to activate the aircraft transponder identification feature. This will help the controller to confirm an aircraft identity or to identify an aircraft.
(Refer to AIM.)

IDENT FEATURE– The special feature in the Air Traffic Control Radar Beacon System (ATCRBS) equipment. It is used to immediately distinguish one displayed beacon target from other beacon targets.
(See IDENT.)

IDENTIFICATION [ICAO]– The situation which exists when the position indication of a particular aircraft is seen on a situation display and positively identified.

IF–
(See INTERMEDIATE FIX.)

IF NO TRANSMISSION RECEIVED FOR (TIME)– Used by ATC in radar approaches to prefix procedures which should be followed by the pilot in event of lost communications.
(See LOST COMMUNICATIONS.)

IFR–
(See INSTRUMENT FLIGHT RULES.)

IFR AIRCRAFT– An aircraft conducting flight in accordance with instrument flight rules.

IFR CONDITIONS– Weather conditions below the minimum for flight under visual flight rules.
(See INSTRUMENT METEOROLOGICAL CONDITIONS.)

IFR DEPARTURE PROCEDURE–
(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)
(Refer to AIM.)

IFR FLIGHT–
(See IFR AIRCRAFT.)

IFR LANDING MINIMUMS–
(See LANDING MINIMUMS.)

IFR MILITARY TRAINING ROUTES (IR)– Routes used by the Department of Defense and associated Reserve and Air Guard units for the purpose of conducting low-altitude navigation and tactical training in both IFR and VFR weather conditions below 10,000 feet MSL at airspeeds in excess of 250 knots IAS.

IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES– Title 14 Code of Federal Regulations Part 91, prescribes standard takeoff rules for certain civil users. At some airports, obstructions or other factors require the establishment of nonstandard takeoff minimums, departure procedures, or both to assist pilots in avoiding obstacles during climb to the minimum en route altitude. Those airports are listed in FAA/DOD Instrument Approach Procedures (IAPs) Charts under a section entitled "IFR Takeoff Minimums and Departure Procedures." The FAA/DOD IAP chart legend illustrates the symbol used to alert the pilot to nonstandard takeoff minimums and departure procedures. When departing IFR from such airports or from any airports where there are no departure procedures, DPs, or ATC facilities available, pilots should advise ATC of any departure limitations. Controllers may query a pilot to determine acceptable departure directions, turns, or headings after takeoff. Pilots should be familiar with the departure procedures and must assure that their aircraft can meet or exceed any specified climb gradients.

IF/IAWP– Intermediate Fix/Initial Approach Waypoint. The waypoint where the final approach course of a T approach meets the crossbar of the T. When designated (in conjunction with a TAA) this waypoint will be used as an IAWP when approaching the airport from certain directions, and as an IFWP when beginning the approach from another IAWP.

IFWP– Intermediate Fix Waypoint

ILS–
(See INSTRUMENT LANDING SYSTEM.)

ILS CATEGORIES– 1. Category I. An ILS approach procedure which provides for approach to a height above touchdown of not less than 200 feet and with runway visual range of not less than 1,800 feet.– 2. Special Authorization Category I. An ILS approach procedure which provides for approach to a height above touchdown of not less than 150 feet and with runway visual range of not less than 1,400 feet, HUD to DH. 3. Category II. An ILS approach procedure which provides for approach to a height above touchdown of not less than 100 feet and with runway visual range of not less than 1,200 feet (with autoland or HUD to touchdown and noted on authorization, RVR 1,000 feet).– 4. Special Authorization Category II with Reduced Lighting. An ILS approach procedure which provides for approach to a height above touchdown of not less than 100 feet and with runway visual range of not less than 1,200 feet with autoland or HUD to touchdown and noted on authorization (no touchdown zone and centerline lighting are required).– 5. Category III:

a. IIIA.–An ILS approach procedure which provides for approach without a decision height minimum and with runway visual range of not less than 700 feet.

b. IIIB.–An ILS approach procedure which provides for approach without a decision height minimum and with runway visual range of not less than 150 feet.

c. IIIC.–An ILS approach procedure which provides for approach without a decision height minimum and without runway visual range minimum.

ILS PRM APPROACH– An instrument landing system (ILS) approach conducted to parallel runways whose extended centerlines are separated by less than 4,300 feet and at least 3,000 feet where independent closely spaced approaches are permitted. Also used in conjunction with an LDA PRM, RNAV PRM or GLS PRM approach to conduct Simultaneous Offset Instrument Approach (SOIA) operations. No Transgression Zone (NTZ) monitoring is required to

conduct these approaches. ATC utilizes an enhanced display with alerting and, with certain runway spacing, a high update rate PRM surveillance sensor. Use of a secondary monitor frequency, pilot PRM training, and publication of an Attention All Users Page are also required for all PRM approaches.
(Refer to AIM)

IM–
(See INNER MARKER.)

IMC–
(See INSTRUMENT METEOROLOGICAL CONDITIONS.)

IMMEDIATELY– Used by ATC or pilots when such action compliance is required to avoid an imminent situation.

INCERFA (Uncertainty Phase) [ICAO]– A situation wherein uncertainty exists as to the safety of an aircraft and its occupants.

INCREASED SEPARATION REQUIRED (ISR)– Indicates the confidence level of the track requires 5NM separation. 3NM separation, 1 1/2NM separation, and target resolution cannot be used.

INCREASE SPEED TO (SPEED)–
(See SPEED ADJUSTMENT.)

INERTIAL NAVIGATION SYSTEM (INS)– An RNAV system which is a form of self-contained navigation.
(See Area Navigation/RNAV.)

INFLIGHT REFUELING–
(See AERIAL REFUELING.)

INFLIGHT WEATHER ADVISORY–
(See WEATHER ADVISORY.)

INFORMATION REQUEST (INREQ)– A request originated by an FSS for information concerning an overdue VFR aircraft.

INITIAL APPROACH FIX (IAF)– The fixes depicted on instrument approach procedure charts that identify the beginning of the initial approach segment(s).
(See FIX.)
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

INITIAL APPROACH SEGMENT–
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

INITIAL APPROACH SEGMENT [ICAO]– That segment of an instrument approach procedure between the initial approach fix and the intermediate approach fix or, where applicable, the final approach fix or point.

INLAND NAVIGATION FACILITY– A navigation aid on a North American Route at which the common route and/or the noncommon route begins or ends.

INNER MARKER– A marker beacon used with an ILS (CAT II) precision approach located between the middle marker and the end of the ILS runway, transmitting a radiation pattern keyed at six dots per second and indicating to the pilot, both aurally and visually, that he/she is at the designated decision height (DH), normally 100 feet above the touchdown zone elevation, on the ILS CAT II approach. It also marks progress during a CAT III approach.
(See INSTRUMENT LANDING SYSTEM.)
(Refer to AIM.)

INNER MARKER BEACON–
(See INNER MARKER.)

INREQ–
(See INFORMATION REQUEST.)

INS–
(See INERTIAL NAVIGATION SYSTEM.)

INSTRUMENT APPROACH–
(See INSTRUMENT APPROACH PROCEDURE.)

INSTRUMENT APPROACH OPERATIONS [ICAO]– An approach and landing using instruments for navigation guidance based on an instrument approach procedure. There are two methods for executing instrument approach operations:

a. A two–dimensional (2D) instrument approach operation, using lateral navigation guidance only; and

b. A three–dimensional (3D) instrument approach operation, using both lateral and vertical navigation guidance.

Note: Lateral and vertical navigation guidance refers to the guidance provided either by:
a) a ground–based radio navigation aid; or
b) computer–generated navigation data from ground–based, space–based, self–contained navigation aids or a combination of these.

(See ICAO term INSTRUMENT APPROACH PROCEDURE.)

INSTRUMENT APPROACH PROCEDURE– A series of predetermined maneuvers for the orderly

transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or to a point from which a landing may be made visually. It is prescribed and approved for a specific airport by competent authority.

(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

(Refer to 14 CFR Part 91.)

(Refer to AIM.)

a. U.S. civil standard instrument approach procedures are approved by the FAA as prescribed under 14 CFR Part 97 and are available for public use.

b. U.S. military standard instrument approach procedures are approved and published by the Department of Defense.

c. Special instrument approach procedures are approved by the FAA for individual operators but are not published in 14 CFR Part 97 for public use.

(See ICAO term INSTRUMENT APPROACH PROCEDURE.)

INSTRUMENT APPROACH PROCEDURE [ICAO]– A series of predetermined maneuvers by reference to flight instruments with specified protection from obstacles from the initial approach fix, or where applicable, from the beginning of a defined arrival route to a point from which a landing can be completed and thereafter, if a landing is not completed, to a position at which holding or en route obstacle clearance criteria apply.

(See ICAO term INSTRUMENT APPROACH OPERATIONS)

INSTRUMENT APPROACH PROCEDURE CHARTS–

(See AERONAUTICAL CHART.)

INSTRUMENT DEPARTURE PROCEDURE (DP)– A preplanned instrument flight rule (IFR) departure procedure published for pilot use, in graphic or textual format, that provides obstruction clearance from the terminal area to the appropriate en route structure. There are two types of DP, Obstacle Departure Procedure (ODP), printed either textually or graphically, and, Standard Instrument Departure (SID), which is always printed graphically.

(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)

(See OBSTACLE DEPARTURE PROCEDURES.)

(See STANDARD INSTRUMENT DEPARTURES.)

(Refer to AIM.)

INSTRUMENT DEPARTURE PROCEDURE (DP) CHARTS–

(See AERONAUTICAL CHART.)

INSTRUMENT FLIGHT RULES (IFR)– Rules governing the procedures for conducting instrument flight. Also a term used by pilots and controllers to indicate type of flight plan.

(See INSTRUMENT METEOROLOGICAL CONDITIONS.)

(See VISUAL FLIGHT RULES.)

(See VISUAL METEOROLOGICAL CONDITIONS.)

(See ICAO term INSTRUMENT FLIGHT RULES.)

(Refer to AIM.)

INSTRUMENT FLIGHT RULES [ICAO]– A set of rules governing the conduct of flight under instrument meteorological conditions.

INSTRUMENT LANDING SYSTEM (ILS)– A precision instrument approach system which normally consists of the following electronic components and visual aids:

a. Localizer.

(See LOCALIZER.)

b. Glideslope.

(See GLIDESLOPE.)

c. Outer Marker.

(See OUTER MARKER.)

d. Middle Marker.

(See MIDDLE MARKER.)

e. Approach Lights.

(See AIRPORT LIGHTING.)

(Refer to 14 CFR Part 91.)

(Refer to AIM.)

INSTRUMENT METEOROLOGICAL CONDITIONS (IMC)– Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling less than the minima specified for visual meteorological conditions.

(See INSTRUMENT FLIGHT RULES.)

(See VISUAL FLIGHT RULES.)

(See VISUAL METEOROLOGICAL CONDITIONS.)

INSTRUMENT RUNWAY– A runway equipped with electronic and visual navigation aids for which a precision or nonprecision approach procedure having straight-in landing minimums has been approved.

(See ICAO term INSTRUMENT RUNWAY.)

INSTRUMENT RUNWAY [ICAO]– One of the following types of runways intended for the operation of aircraft using instrument approach procedures:

a. Nonprecision Approach Runway– An instrument runway served by visual aids and a nonvisual aid providing at least directional guidance adequate for a straight-in approach.

b. Precision Approach Runway, Category I– An instrument runway served by ILS and visual aids intended for operations down to 60 m (200 feet) decision height and down to an RVR of the order of 800 m.

c. Precision Approach Runway, Category II– An instrument runway served by ILS and visual aids intended for operations down to 30 m (100 feet) decision height and down to an RVR of the order of 400 m.

d. Precision Approach Runway, Category III– An instrument runway served by ILS to and along the surface of the runway and:

1. Intended for operations down to an RVR of the order of 200 m (no decision height being applicable) using visual aids during the final phase of landing;

2. Intended for operations down to an RVR of the order of 50 m (no decision height being applicable) using visual aids for taxiing;

3. Intended for operations without reliance on visual reference for landing or taxiing.

Note 1: See Annex 10 Volume I, Part I, Chapter 3, for related ILS specifications.

Note 2: Visual aids need not necessarily be matched to the scale of nonvisual aids provided. The criterion for the selection of visual aids is the conditions in which operations are intended to be conducted.

INTEGRITY– The ability of a system to provide timely warnings to users when the system should not be used for navigation.

INTERMEDIATE APPROACH SEGMENT–

(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

INTERMEDIATE APPROACH SEGMENT [ICAO]– That segment of an instrument approach procedure between either the intermediate approach fix and the final approach fix or point, or between the end of a reversal, race track or dead reckoning track procedure and the final approach fix or point, as appropriate.

INTERMEDIATE FIX– The fix that identifies the beginning of the intermediate approach segment of an instrument approach procedure. The fix is not normally identified on the instrument approach chart as an intermediate fix (IF).

(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

INTERMEDIATE LANDING– On the rare occasion that this option is requested, it should be approved. The departure center, however, must advise the ATCSCC so that the appropriate delay is carried over and assigned at the intermediate airport. An intermediate landing airport within the arrival center will not be accepted without coordination with and the approval of the ATCSCC.

INTERNATIONAL AIRPORT– Relating to international flight, it means:

a. An airport of entry which has been designated by the Secretary of Treasury or Commissioner of Customs as an international airport for customs service.

b. A landing rights airport at which specific permission to land must be obtained from customs authorities in advance of contemplated use.

c. Airports designated under the Convention on International Civil Aviation as an airport for use by international commercial air transport and/or international general aviation.

(See ICAO term INTERNATIONAL AIRPORT.)
(Refer to Chart Supplement U.S.)

INTERNATIONAL AIRPORT [ICAO]– Any airport designated by the Contracting State in whose territory it is situated as an airport of entry and departure for international air traffic, where the formalities incident to customs, immigration, public health, animal and plant quarantine and similar procedures are carried out.

INTERNATIONAL CIVIL AVIATION ORGANIZATION [ICAO]– A specialized agency of the United Nations whose objective is to develop the principles and techniques of international air navigation and to foster planning and development of international civil air transport.

INTERROGATOR– The ground-based surveillance radar beacon transmitter-receiver, which normally scans in synchronism with a primary radar,

transmitting discrete radio signals which repetitiously request all transponders on the mode being used to reply. The replies received are mixed with the primary radar returns and displayed on the same plan position indicator (radar scope). Also, applied to the airborne element of the TACAN/DME system.

(See TRANSPONDER.)

(Refer to AIM.)

INTERSECTING RUNWAYS– Two or more runways which cross or meet within their lengths.

(See INTERSECTION.)

INTERSECTION–

a. A point defined by any combination of courses, radials, or bearings of two or more navigational aids.

b. Used to describe the point where two runways, a runway and a taxiway, or two taxiways cross or meet.

INTERSECTION DEPARTURE– A departure from any runway intersection except the end of the runway.

(See INTERSECTION.)

INTERSECTION TAKEOFF–

(See INTERSECTION DEPARTURE.)

IR–

(See IFR MILITARY TRAINING ROUTES.)

IRREGULAR SURFACE– A surface that is open for use but not per regulations.

ISR–

(See INCREASED SEPARATION REQUIRED.)

a. Nonradar Approach. Used to describe instrument approaches for which course guidance on final approach is not provided by ground-based precision or surveillance radar. Radar vectors to the final approach course may or may not be provided by ATC. Examples of nonradar approaches are VOR, NDB, TACAN, ILS, RNAV, and GLS approaches.

(See FINAL APPROACH COURSE.)

(See FINAL APPROACH-IFR.)

(See INSTRUMENT APPROACH PROCEDURE.)

(See RADAR APPROACH.)

b. Nonradar Approach Control. An ATC facility providing approach control service without the use of radar.

(See APPROACH CONTROL FACILITY.)

(See APPROACH CONTROL SERVICE.)

c. Nonradar Arrival. An aircraft arriving at an airport without radar service or at an airport served by a radar facility and radar contact has not been established or has been terminated due to a lack of radar service to the airport.

(See RADAR ARRIVAL.)

(See RADAR SERVICE.)

d. Nonradar Route. A flight path or route over which the pilot is performing his/her own navigation. The pilot may be receiving radar separation, radar monitoring, or other ATC services while on a nonradar route.

(See RADAR ROUTE.)

e. Nonradar Separation. The spacing of aircraft in accordance with established minima without the use of radar; e.g., vertical, lateral, or longitudinal separation.

(See RADAR SEPARATION.)

NON−RESTRICTIVE ROUTING (NRR)− Portions of a proposed route of flight where a user can flight plan the most advantageous flight path with no requirement to make reference to ground−based NAVAIDs.

NOPAC−

(See NORTH PACIFIC.)

NORDO (No Radio)− Aircraft that cannot or do not communicate by radio when radio communication is required are referred to as "NORDO."

(See LOST COMMUNICATIONS.)

NORMAL OPERATING ZONE (NOZ)− The NOZ is the operating zone within which aircraft flight remains during normal independent simultaneous parallel ILS approaches.

NORTH AMERICAN ROUTE− A numerically coded route preplanned over existing airway and route systems to and from specific coastal fixes serving the North Atlantic. North American Routes consist of the following:

a. Common Route/Portion. That segment of a North American Route between the inland navigation facility and the coastal fix.

b. Noncommon Route/Portion. That segment of a North American Route between the inland navigation facility and a designated North American terminal.

c. Inland Navigation Facility. A navigation aid on a North American Route at which the common route and/or the noncommon route begins or ends.

d. Coastal Fix. A navigation aid or intersection where an aircraft transitions between the domestic route structure and the oceanic route structure.

NORTH AMERICAN ROUTE PROGRAM (NRP)− The NRP is a set of rules and procedures which are designed to increase the flexibility of user flight planning within published guidelines.

NORTH ATLANTIC HIGH LEVEL AIRSPACE (NAT HLA)− That volume of airspace (as defined in ICAO Document 7030) between FL 285 and FL 420 within the Oceanic Control Areas of Bodo Oceanic, Gander Oceanic, New York Oceanic East, Reykjavik, Santa Maria, and Shanwick, excluding the Shannon and Brest Ocean Transition Areas. ICAO Doc 007 *North Atlantic Operations and Airspace Manual* provides detailed information on related aircraft and operational requirements.

NORTH MARK− A beacon data block sent by the host computer to be displayed by the ARTS on a 360 degree bearing at a locally selected radar azimuth and distance. The North Mark is used to ensure correct range/azimuth orientation during periods of CENRAP.

NORTH PACIFIC− An organized route system between the Alaskan west coast and Japan.

NOT STANDARD− Varying from what is expected or published. For use in NOTAMs only.

NOT STD-

(See NOT STANDARD.)

NOTAM–

(See NOTICE TO AIRMEN.)

NOTAM [ICAO]– A notice containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

a. I Distribution– Distribution by means of telecommunication.

b. II Distribution– Distribution by means other than telecommunications.

NOTICE TO AIRMEN (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.)

NOTICES TO AIRMEN PUBLICATION– A publication issued every 28 days, designed primarily for the pilot, which contains NOTAMs, graphic notices, and other information considered essential to the safety of flight as well as supplemental data to other aeronautical publications. The contraction NTAP is used in NOTAM text.

(See NOTICE TO AIRMEN.)

NRR–

(See NON–RESTRICTIVE ROUTING.)

NRS–

(See NAVIGATION REFERENCE SYSTEM.)

NTAP–

(See NOTICES TO AIRMEN PUBLICATION.)

NUMEROUS TARGETS VICINITY (LOCATION)– A traffic advisory issued by ATC to advise pilots that targets on the radar scope are too numerous to issue individually.

(See TRAFFIC ADVISORIES.)

U

UHF–

(See ULTRAHIGH FREQUENCY.)

ULTRAHIGH FREQUENCY (UHF)– The frequency band between 300 and 3,000 MHz. The bank of radio frequencies used for military air/ground voice communications. In some instances this may go as low as 225 MHz and still be referred to as UHF.

ULTRALIGHT VEHICLE– A single-occupant aeronautical vehicle operated for sport or recreational purposes which does not require FAA registration, an airworthiness certificate, or pilot certification. Operation of an ultralight vehicle in certain airspace requires authorization from ATC.

(Refer to 14 CFR Part 103.)

UNABLE– Indicates inability to comply with a specific instruction, request, or clearance.

UNASSOCIATED– A radar target that does not display a data block with flight identification and altitude information.

(See ASSOCIATED.)

UNCONTROLLED AIRSPACE– Airspace in which aircraft are not subject to controlled airspace (Class A, B, C, D, or E) separation criteria.

UNDER THE HOOD– Indicates that the pilot is using a hood to restrict visibility outside the cockpit while simulating instrument flight. An appropriately rated pilot is required in the other control seat while this operation is being conducted.

(Refer to 14 CFR Part 91.)

UNFROZEN– The Scheduled Time of Arrival (STA) tags, which are still being rescheduled by the time based flow management (TBFM) calculations. The aircraft will remain unfrozen until the time the corresponding estimated time of arrival (ETA) tag passes the preset freeze horizon for that aircraft's stream class. At this point the automatic rescheduling will stop, and the STA becomes "frozen."

UNICOM– A nongovernment communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOMs are shown on aeronautical charts and publications.

(See CHART SUPPLEMENT U.S.)

(Refer to AIM.)

UNMANNED AIRCRAFT (UA)- A device used or intended to be used for flight that has no onboard pilot. This device can be any type of airplane, helicopter, airship, or powered-lift aircraft. Unmanned free balloons, moored balloons, tethered aircraft, gliders, and unmanned rockets are not considered to be a UA.

UNMANNED AIRCRAFT SYSTEM (UAS)- An unmanned aircraft and its associated elements related to safe operations, which may include control stations (ground, ship, or air based), control links, support equipment, payloads, flight termination systems, and launch/recovery equipment. It consists of three elements: unmanned aircraft, control station, and data link.

UNPUBLISHED ROUTE– A route for which no minimum altitude is published or charted for pilot use. It may include a direct route between NAVAIDs, a radial, a radar vector, or a final approach course beyond the segments of an instrument approach procedure.

(See PUBLISHED ROUTE.)

(See ROUTE.)

UNRELIABLE (GPS/WAAS)– An advisory to pilots indicating the expected level of service of the GPS and/or WAAS may not be available. Pilots must then determine the adequacy of the signal for desired use.

UPWIND LEG–

(See TRAFFIC PATTERN.)

URGENCY– A condition of being concerned about safety and of requiring timely but not immediate assistance; a potential distress condition.

(See ICAO term URGENCY.)

URGENCY [ICAO]– A condition concerning the safety of an aircraft or other vehicle, or of person on board or in sight, but which does not require immediate assistance.

USAFIB–

(See ARMY AVIATION FLIGHT INFORMATION BULLETIN.)

BRIEFING GUIDE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

Initiated By: AJV−0
Vice President, Mission Support Services

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1. PARAGRAPH NUMBER AND TITLE: 2−6−2. PIREP SOLICITATION AND DISSEMINATION

2. BACKGROUND: A National Transportation Safety Board Special Investigation Report recommended that the Federal Aviation Administration (FAA) revise FAA Order JO 7110.65 to ensure the chapter relating to pilot weather reports (PIREP) include improved and consistent guidance about PIREP coding, handling, solicitation, and dissemination. Additionally, the FAA included PIREPs in the ATO's Top 5 highest−risk safety issues. A Corrective Action Plan was formulated to mitigate PIREP related concerns, these changes are a part of the result.

3. CHANGE:

OLD	NEW
2−6−2. PIREP SOLICITATION AND DISSEMINATION	**2−6−2. PIREP SOLICITATION AND DISSEMINATION**
Emphasis must be placed on the solicitation and dissemination of PIREPs. Timely dissemination of PIREPs alerts pilots to significant weather reports. PIREPS also provide information required by ATC to provide for the safe and efficient use of airspace. This includes reports of strong frontal activity, squall lines, thunderstorms, light to severe icing, wind shear and turbulence (including clear air turbulence) of moderate or greater intensity, braking action, volcanic eruptions and volcanic ash clouds, detection of sulfur gases in the cabin, and other conditions pertinent to flight safety. Controllers must provide the information in sufficient detail to assist pilots in making decisions pertinent to flight safety.	Emphasis must be placed on the solicitation and dissemination of PIREPs. Timely dissemination of PIREPs alerts pilots to weather **conditions and provides information useful to forecasters in the development of aviation forecasts**. PIREP**s** 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. **Null reports are critical to aviation weather forecasters and pilots and must be disseminated**. Controllers must provide the information in sufficient detail to assist pilots in making decisions pertinent to flight safety.
REFERENCE through **a**	No Change
1. Ceilings at or below 5,000 feet. These PIREPs must include cloud base/top reports when feasible. When providing approach control services, ensure that at least one descent/climb−out PIREP, including cloud base(s), top(s), and other related phenomena, is obtained each hour.	**1.** Ceilings at or below 5,000 feet. These PIREPs must include cloud **bases, tops and sky conditions when available**. **Additionally,** when providing approach control services, ensure that at least one descent/climb-out PIREP is obtained each hour.
a2 through **a6**	No Change
7. Braking action reports.	**7.** Braking action reports **less than good**.
8. Volcanic ash clouds.	**8. Volcanic eruptions, ash clouds, and/or detection of sulfur gases in the cabin: sulfur dioxide (SO_2) or hydrogen sulfide (H_2S)**.
Add	**(a) If only SO_2 or H_2S are detected with no reported volcanic ash clouds, ask the pilot if volcanic ash clouds are in the vicinity.**
9. Detection of sulfur gases (SO2 or H2S), associated with volcanic activity, in the cabin.	Delete

NOTE–	No Change
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.*	No Change
b through **d**	No Change
1. Relay pertinent PIREP information to concerned aircraft in a timely manner.	**1.** Relay 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.*	***NOTE–*** *Use the word gain and/or loss when describing to pilots the effects of wind shear on airspeed.* ***The word "chop" may be used by pilots in lieu of the term "turbulence" in pilot communications with ATC. Chop is a type of turbulence.***
EXAMPLE and ***REFERENCE***	No Change
2. *EN ROUTE.* Relay all operationally significant PIREPs to the facility weather coordinator.	**2.** *EN ROUTE.* Relay all PIREPs to the facility weather coordinator **and to all aircraft in sector(s) below and adjacent to the report.**
3. *TERMINAL.* Relay all operationally significant PIREPs to:	**3.** *TERMINAL.* Relay all PIREPs to:

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1. PARAGRAPH NUMBER AND TITLE: 3–1–7. POSITION DETERMINATION

2. BACKGROUND: The March 29, 2018, Change 1 to FAA Order JO 7110.65, Paragraph 3–7–2a1 and 3–7–2a2, specifically requires ATCS to give routes for aircraft or vehicles to proceed on airport movement areas. There is currently no requirement for ATC to verify the position of pedestrians or equipment before providing instructions to proceed onto an airport movement area.

3. CHANGE:

OLD	**NEW**
3–1–7. POSITION DETERMINATION	**3–1–7. POSITION DETERMINATION**
Determine the position of an aircraft before issuing taxi instructions or takeoff clearance.	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– *The aircraft's position may be determined visually by the controller, by pilots, or through the use of the ASDE.*	***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.***

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1. PARAGRAPH NUMBER AND TITLE: 3−9−8. INTERSECTING RUNWAY/INTERSECTING FLIGHT PATH OPERATIONS

2. BACKGROUND: In November 2016, FAA Order JO 7110.65W, Change 2, Paragraph 3−7−2, Taxi and Ground Movement Operations, added language allowing ATCSs to ascertain by visual reference that an aircraft would exit a runway at a certain point. Though the change pertained specifically to taxi and ground movement operations, the application is relevant to Paragraph 3−9−8, Intersecting Runway/Intersecting Flight Path Operations, and the same functionality is sought.

3. CHANGE:

OLD	NEW
3−9−8. INTERSECTING RUNWAY/ INTERSECTING FLIGHT PATH OPERATIONS	**3−9−8. INTERSECTING RUNWAY/ INTERSECTING FLIGHT PATH OPERATIONS**
Title through **b1**	No Change
2. A preceding arriving aircraft is clear of the landing runway, completed the landing roll and will hold short of the intersection, or has passed the intersection. (See FIG 3−9−10).	**2. A preceding arriving aircraft (See FIG 3−9−10):**
Add	**(a) Is clear of the landing runway, or**
Add	**(b) Has completed the landing roll on the runway and will hold short of the intersection, or**
Add	**(c) Has completed the landing roll and is observed turning at an exit point prior to the intersection, or**
Add	**(d) Has passed the intersection.**
REFERENCE− *P/CG Term − Clear of the Runway.*	***REFERENCE−*** *P/CG Term − Clear of the Runway.* ***P/CG Term − Landing Roll.***

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1. PARAGRAPH NUMBER AND TITLE: 3−10−5. LANDING CLEARANCE

2. BACKGROUND: On March 4, 2010, Notice 7110.517 to FAA Order JO 7110.65 became effective. This notice amended the phraseology requirement in Paragraph 3−10−5, Landing Clearance, to include “change to runway” when issuing a landing clearance after a change to the runway assignment. This phraseology was identified in National Transportation Safety Board Recommendation A−06−65 following an incident of miscommunication when an assigned landing runway was changed. The new phraseology was intended to clearly communicate that a runway change had occurred. Currently, wrong surface landings are one of the Air Traffic Organization’s Top 5 highest−risk safety issues. This new language builds on previous mitigations and is intended to clarify the “runway” on which a pilot is to land.

3. CHANGE:

OLD	NEW
3–10–5. LANDING CLEARANCE	**3–10–5. LANDING CLEARANCE**
a. When issuing a clearance to land, first state the runway number followed by landing clearance. If the landing runway is changed, controllers must preface the landing clearance with "Change to runway."	**a.** When issuing a clearance to land, first state the runway number followed by landing clearance. If the landing runway is changed, controllers must preface the landing clearance with "Change to runway" **followed by the runway number. Controllers must then restate the runway number followed by the landing clearance.**
PHRASEOLOGY– *RUNWAY (number) CLEARED TO LAND.*	***PHRASEOLOGY–*** *RUNWAY (number) CLEARED TO LAND.*
Or	*Or*
CHANGE TO RUNWAY (number) CLEARED TO LAND.	*CHANGE TO RUNWAY (number)* ***RUNWAY (number)*** *CLEARED TO LAND.*
Add	***NOTE–*** ***The purpose of the "change to runway" phraseology and restating the runway number is to emphasize to the pilot that they are being cleared to land on a runway other than what they were expecting.***

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1. PARAGRAPH NUMBER AND TITLE:
4–2–2. CLEARANCE PREFIX
4–3–4. DEPARTURE RESTRICTIONS, CLEARANCE VOID TIMES, HOLD FOR RELEASE, AND RELEASE TIMES
4–3–9. VFR RELEASE OF IFR DEPARTURE

2. BACKGROUND: Flight Service currently relays clearances to pilots via telephone at airports which lack direct radio communications with air traffic control (ATC) or Flight Service. Flight Service also relays cancellations of IFR Instrument Flight Rule (IFR) flight plans from pilots to ATC. Except in Alaska, this change will discontinue the Flight Service telephone relay of IFR clearances from all ATC facilities operated by the FAA and reduce the number of IFR flight plan cancellations handled by Flight Service. Clearance Relay, Part 1, was implemented last year to publish existing telephone numbers for approach control facilities that delivered clearances directly to users. The lines may also be used for the cancellation of IFR flight plans. Pilots now call these facilities directly instead of calling Flight Service to relay the clearance, formalizing a process already in place by publishing the phone numbers of the facilities in the Chart Supplement U.S. The initiative included 30 approach controls covering 667 airports. Clearance Relay, Part 2, will enable pilots to obtain an IFR clearance and/or cancel IFR flight plans via telephone by: 1. Calling the overlying Air Route Traffic Control Center (ARTCC) Flight Data Units (FDU) which will then relay the clearance from the appropriate sector, specialty, or control facility to the pilot. 2. Calling an approach control facility with clearance delivery phone numbers published in the Chart Supplement U.S. Pilots requesting clearances via radio from ATC or Leidos (formerly Lockheed Martin) are not affected by this change. The lines may also be used for cancellation of IFR flight plans. Flight Service will continue to relay clearances to pilots via telephone until these phone numbers have been published. Once published, Flight Service will provide pilots with either the name of the facility to contact or the correct phone number to use in order to obtain a clearance. In addition, Flight Service will continue to provide priority handling for MedEvac Flights.

3. CHANGE:

OLD

4–2–2. CLEARANCE PREFIX

Title through **a**

b. Flight service stations must prefix a clearance with the appropriate phrase: "ATC clears," "ATC advises," etc.

NEW

4–2–2. CLEARANCE PREFIX

No Change

b. Flight service stations **and ARTCC Flight Data Units** must prefix a clearance with the appropriate phrase: "ATC clears," "ATC advises," etc.

OLD

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

Title through **b2**

3. When conditions allow, release the aircraft as soon as possible.

PHRASEOLOGY–
To another controller,

(aircraft identification) RELEASED.

To a flight service specialist,

ADVISE (aircraft identification) RELEASED FOR DEPARTURE.

To a pilot at an airport not served by a control tower,

(aircraft identification) RELEASED FOR DEPARTURE.

NEW

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

No Change

No Change

PHRASEOLOGY–
To another controller,

(aircraft identification) RELEASED.

To a flight service specialist, ***or Flight Data Communication Specialist (FDCS)***

ADVISE (aircraft identification) RELEASED FOR DEPARTURE.

To a pilot at an airport not served by a control tower,

(aircraft identification) RELEASED FOR DEPARTURE.

OLD

4–3–9. VFR RELEASE OF IFR DEPARTURE

When an aircraft which has filed an IFR flight plan requests a VFR departure through a terminal facility, FSS, or air/ground communications station:

NEW

4–3–9. VFR RELEASE OF IFR DEPARTURE

When an aircraft which has filed an IFR flight plan requests a VFR departure through a terminal facility, FSS, **ARTCC Flight Data Unit,** or air/ground communications station:

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1. PARAGRAPH NUMBER AND TITLE: 4–3–2. DEPARTURE CLEARANCES

2. BACKGROUND: Aircraft departing an airport on an IFR flight plan may file for and/or be assigned a Departure Procedure (DP) or a heading within a Diverse Vector Area (DVA). The use of these assignments requires very specific understandings that can limit both the pilot and/or the controller. Language has been updated to provide clarification concerning the assignment and use of DPs or DVAs.

3. CHANGE:

OLD	NEW
4–3–2. DEPARTURE CLEARANCES	**4–3–2. DEPARTURE CLEARANCES**
Title through **c**	No Change
1. Specify direction of takeoff/turn or initial heading to be flown after takeoff as follows:	No Change
(a) Locations with Airport Traffic Control Service–Specify direction of takeoff/turn or initial heading as necessary, consistent with published departure procedures (DP) or diverse vector areas (DVA), where applicable.	**(a)** Locations with Airport Traffic Control Service–Specify direction of takeoff/turn or initial heading as necessary, consistent with published**:**
Add	**(1) Departure Procedures (DP). If an aircraft is vectored off a published Standard Instrument Departure (SID) or Obstacle Departure Procedure (ODP), that vector cancels the DP and ATC becomes responsible for separation from terrain and /or obstructions. IFR aircraft must be assigned an altitude.**
Add	**(2) Diverse Vector Areas (DVA). The assignment of an initial heading using a DVA can be given to the pilot as part of the initial clearance, but must be given no later than with the takeoff clearance. Once airborne, an aircraft assigned headings within the DVA can be vectored below the MVA/MIA. Controllers cannot interrupt an aircraft's climb in the DVA until the aircraft is at or above the MVA/MIA.**
Add	***NOTE–*** ***It is important for controllers to understand that there can be differences in published climb gradients applicable to individual departure procedures serving the same airport or runway. Assigning a different departure procedure without the pilot being able to re–brief may result in the pilot rejecting the new procedure.***
Add	***REFERENCE–*** ***AIM, Para 5–2–7. Departure Control.*** ***AIM, Para 5–2–9. Instrument Departure Procedures (DP) – Obstacle Departure Procedures (ODP) and Standard Instrument Departures (SID).***
NOTE– *If an initial heading is assigned in lieu of an assigned/filed Pilot Nav SID, and an ODP is published for that runway, pilots may commence turn after reaching a safe altitude or they may complete the ODP instructions for obstacle clearance, based on the regulations they are operating under before turning to the assigned heading.*	Delete

1. PARAGRAPH NUMBER AND TITLE:
4−4−2. ROUTE STRUCTURE TRANSITIONS
5−5−1. APPLICATION
6−5−4. MINIMA ALONG OTHER THAN ESTABLISHED AIRWAYS OR ROUTES

2. BACKGROUND: In April 2014, the use of RNAV point−to−point random routes without radar monitoring was permitted under certain conditions NAS−wide. Since that time, facilities have asked for a means to transition from one point−to−point route to another if necessary for weather deviations, pilot requests, or operational need. Current procedures do not account for this need.

3. CHANGE:

OLD

4−4−2. ROUTE STRUCTURE TRANSITIONS

Title through **f**

g. Clear RNAV aircraft between designated or established ATS routes via random RNAV routes to a NAVAID, waypoint, airport or fix on the new route.

h. Provide radar monitoring to RNAV equipped aircraft transitioning via random RNAV routes.

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

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 5−5−1, Application.
*P/CG Term * Global Navigation Satellite System (GNSS) [ICAO].*

NEW

4−4−2. ROUTE STRUCTURE TRANSITIONS

No Change

g. Clear RNAV aircraft between designated or established ATS routes via random RNAV routes to a NAVAID, waypoint, airport or fix on the new route. **Provide radar monitoring to aircraft transitioning via random RNAV routes.**

Delete

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

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 5−5−1, Application.
P/CG Term − Global Navigation Satellite System (GNSS) [ICAO].
FAA Order JO 7110.65, Para 6−5−4, Minima Along Other Than Established Airways Or Routes.

OLD

5−5−1. APPLICATION

Title through **a**

EXCEPTION. GNSS equipped aircraft /G, /L, /S, and /V not on a random 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 5−1−8d., Area Navigation (RNAV).
AIM, Para 5−3−4a. 3. 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.

AC 90−101A, U.S. Terminal and En Route Area Navigation (RNAV) Operations, Para 8a, Navigation System Accuracy.

NEW

5−5−1. APPLICATION

No Change

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

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

Delete

OLD	NEW
6–5–4. MINIMA ALONG OTHER THAN ESTABLISHED AIRWAYS OR ROUTES	**6–5–4. MINIMA ALONG OTHER THAN ESTABLISHED AIRWAYS OR ROUTES**
Title through **a4(b)**	No Change
(c) Assigned altitudes must be at or above the highest MIA along the projected route segment being flown, including the protected airspace of that route segment.	No Change
Add	***EXAMPLE–*** ***A pilot has filed a point–to–point route from XYZ to ABC at 13,000 feet. Departure procedures from the originating airport place the aircraft a significant distance from XYZ; however, the aircraft can establish itself along the route segment from XYZ to ABC. Ascertain when the pilot is established on the point–to–point route segment and at an altitude that meets or exceeds the highest MVA/MIA projected along the route of flight, then issue a clearance. "Verify when you are established on the XYZ to ABC route segment at or above 6,000 feet."***
(d) When the GNSS aircraft is being provided radar service and is transitioning to non–radar airspace, provide clearance direct to the named point in non–radar airspace in accordance with subparagraphs a4(a) through (c).	No Change
EXAMPLE– *A pilot has filed a point–to–point route from XYZ to ABC at 13,000 feet. Departure procedures from the originating airport place the aircraft a significant distance from XYZ; however, the aircraft can establish itself along the route segment from XYZ to ABC. Ascertain when the pilot is established on the point–to–point route segment and at an altitude, which meets or exceeds the highest MVA/MIA projected along the route of flight, then issue a clearance. "Verify when you are established on the XYZ to ABC route segment at or above 6,000 feet."*	Delete
Add	**5. If transitioning between two random point–to–point routes, GNSS–equipped aircraft being provided non–radar separation may be cleared via an impromptu route when the following conditions are met:**
Add	**(a) The impromptu route segment must not exceed the distance to the nearest available recallable fix/waypoint consistent with the direction of flight; and**
Add	**(b) Assigned altitudes must be at or above the highest MIA along the projected route segment being flown; and**

Add	**(c) Aircraft conducting the impromptu route must be separated vertically from other aircraft until established on the new point−to−point route.**
REFERENCE− *FAA Order JO 7110.65, Para 4−4−2, Route Structure Transitions* *FAA Order JO 7110.65, Para 5−5−1, Application*	***REFERENCE−*** ***FAA Order JO 7110.65, Para 4−4−1, Route Use*** *FAA Order JO 7110.65, Para 4−4−2, Route Structure Transitions* *FAA Order JO 7110.65, Para 5−5−1, Application*

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1. PARAGRAPH NUMBER AND TITLE: 4−4−5. CLASS G AIRSPACE

2. BACKGROUND: With the reclassification of United States airspace, on September 16, 1993, FAA Order JO 7110.65H, Change 1, the definition of uncontrolled airspace was removed and replaced with Class G airspace. Although the airspace in question was still uncontrolled, it was newly defined as "Class G Airspace − that is airspace not designated as Class A, B, C, D or E."

3. CHANGE:

OLD	**NEW**
4−4−5. CLASS G AIRSPACE	**4−4−5. CLASS G AIRSPACE**
Include routes through Class G airspace only when requested by the pilot.	No Change
Add	***NOTE−*** **1.** ***Separation criteria are not applicable in Class G airspace. Traffic advisories and safety alerts are applicable within Class G airspace to aircraft that are in direct communication with ATC.***
NOTE− **1.** *Flight plans filed for random RNAV routes through Class G airspace are considered a request by the pilot.*	**2.** *Flight plans filed for random RNAV routes through Class G airspace are considered a request by the pilot.*
2. *Flight plans containing MTR segments in/through Class G airspace are considered a request by the pilot.*	**3.** *Flight plans containing MTR segments in/through Class G airspace are considered a request by the pilot.*
Add	***REFERENCE−*** ***FAA Order JO 7110.65, Para 2−1−1, ATC Service*** ***PCG, Class G Airspace*** ***PCG, Uncontrolled Airspace***

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1. PARAGRAPH NUMBER AND TITLE: 4−8−11. PRACTICE APPROACHES

2. BACKGROUND: When providing service to Visual Flight Rules (VFR) aircraft conducting practice approaches, pilots are instructed to maintain VFR and further advised that separation services are not provided in accordance with paragraph 4−8−11a3(a) and (b). Often, this clearance is followed with a request by the pilot to practice the missed approach as well. However, paragraph 4−8−11b2 states that separation must be provided throughout the missed approach. This indicates that separation services must now be provided during the missed approach segment although they were not provided during the practice approach segment.

3. CHANGE:

OLD	NEW
4–8–11. PRACTICE APPROACHES	**4–8–11. PRACTICE APPROACHES**
Title through **b1**	No Change
2. VFR aircraft are not automatically authorized to execute the missed approach procedure. This authorization must be specifically requested by the pilot and approved by the controller. When a missed approach has been approved, separation must be provided throughout the missed approach.	**2.** VFR aircraft are not automatically authorized to execute the missed approach procedure. This authorization must be specifically requested by the pilot and approved by the controller. When a missed approach has been approved **and the practice approach is conducted in accordance with paragraph 4–8–11 a2,** separation must be provided throughout the **procedure including the** missed approach. **If the practice approach is conducted in accordance with paragraph 4–8–11 a3, separation services are not required during the missed approach.**

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1. PARAGRAPH NUMBER AND TITLE: 5–5–7. PASSING OR DIVERGING

2. BACKGROUND: In June 2015, paragraph 5–5–7 was appended with a note to clarify that the assignment of an angular difference of 15 degrees/45 degrees (as applicable), applied in accordance with the paragraph, was a correct application. The note created a question from the field regarding the 15–degrees/45 degrees (as applicable) divergence requirements. Specifically, must this be achieved through radar vectors alone or with vectors or course assignments as is indicated in the body of the paragraph? This DCP adds further clarification.

3. CHANGE:

OLD	NEW
5–5–7. PASSING OR DIVERGING	**5–5–7. PASSING OR DIVERGING**
Title through **a1(a)**	No Change
NOTE– *Two aircraft, both assigned radar vectors with an angular difference of at least 15 degrees, is considered a correct application of this paragraph.*	***NOTE–*** *Two aircraft, both assigned **courses and/or** radar vectors with an angular difference of at least 15 degrees, is considered a correct application of this paragraph.*
a1(b) through **2(a)**	No Change
NOTE– *Two aircraft, both assigned radar vectors with an angular difference of at least 45 degrees, is considered a correct application of this paragraph.*	***NOTE–*** *Two aircraft, both assigned **courses and/or** radar vectors with an angular difference of at least 45 degrees, is considered a correct application of this paragraph.*

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1. PARAGRAPH NUMBER AND TITLE: 5−7−1. APPLICATION

2. BACKGROUND: A climb or descend via clearance cancels any previously issued speed restriction in order to allow the pilot to meet all published altitude and speed restrictions. But what is expected of a pilot when there are no published speed restrictions on the procedure? If an airspeed was previously assigned, is the pilot expected to maintain that speed, or does the climb or descend via clearance allow the pilot to operate at any speed? The Pilot Controller Procedures & Systems Integration (PCPSI) work group discussed this issue and identified that FAA Order JO 7110.65 does not match the Aeronautical Information Manual (AIM). The AIM advises pilots that a climb or descend via clearance cancels any previously assigned speed. It does not specify that a procedure must have published speeds for that guidance to apply. The 7110.65 is being revised to match the guidance in the AIM. For procedures with no published speeds, if an ATCS needs an aircraft to continue at a previously assigned speed after a climb or descend via clearance is issued, he or she must restate the speed.

3. CHANGE:

OLD	NEW
5−7−1. APPLICATION	**5−7−1. APPLICATION**
Title through **b**	No Change
c. At the time approach clearance is issued, previously issued speed adjustments must be restated if required.	**c**. At the time approach clearance **or a climb via/descend via clearance** is issued, previously **assigned** speed**s** must be restated if required.
d. Approach clearances cancel any previously assigned speed adjustment. Pilots are expected to make their own speed adjustments to complete the approach unless the adjustments are restated.	**d.** Approach clearances **or climb via/descend via clearances** cancel any previously assigned speed**s**. Pilots are expected to make their own speed adjustments to **fly** the approach**, SID, or STAR** unless **assigned speeds** are restated.
Add	***NOTE−*** ***Pilots are required to comply with published speed restrictions.***
e and **f**	No Change
NOTE− **1.** *Pilots complying with speed adjustment instructions should maintain a speed within plus or minus 10 knots or 0.02 Mach number of the specified speed.*	***NOTE−*** **1.** *Pilots complying with speed adjustment instructions **(published or assigned)** should maintain a speed within plus or minus 10 knots or 0.02 Mach number of the specified speed.*
2. *When assigning speeds to achieve spacing between aircraft at different altitudes, consider that ground speed may vary with altitude. Further speed adjustment may be necessary to attain the desired spacing.*	**2.** *When assigning speeds to achieve spacing between aircraft at different altitudes, consider that ground speed may vary with altitude. Further speed adjustment may be necessary to attain the desired spacing.*
Add	**3.** ***Controllers should anticipate pilots will begin adjusting speed at the minimum distance necessary prior to a published speed restriction so as to cross the waypoint/fix at the published speed. Once at the published speed, controllers should expect pilots will maintain the published speed until additional adjustment is required to comply with further published restrictions or ATC assigned speed restrictions.***

1. PARAGRAPH NUMBER AND TITLE: 6−1−1. DISTANCE

2. BACKGROUND: The nonradar procedures contained in FAA Order JO 7110.65, Chapter 6 are based upon ICAO Procedures for Air Navigation Services−Air Traffic Management (PANS−ATM) Doc. 4444, Chapter 5, paragraph 5.4.2.3.1 which specifies "direct pilot/controller VHF voice communication" as a requirement for distance−based nonradar separation. In FAA Order JO 7110.65, Chapter 6, paragraph 6−1−1, the term "direct pilot/controller communication" has been understood to mean direct voice communication. However, as new technologies such as controller/pilot data link communication (CPDLC) have emerged, the definition of direct pilot/controller communication has also changed. While CPDLC is considered a form of direct pilot/controller communication, its use for application of distance−based procedures outlined in FAA Order JO 7110.65, Chapter 6, would not meet the requirement set forth in paragraph 6−1−1. This is an instance where technology has evolved and the requirement in the 7110.65 no longer aligns with its intended purpose.

3. CHANGE:

OLD	NEW
6−1−1. DISTANCE	**6−1−1. DISTANCE**
Use mileage-based (DME and/or ATD) procedures and minima only when direct pilot/controller communications are maintained.	Use mileage-based (DME and/or ATD) procedures and minima only when direct pilot/controller **VHF or UHF voice** communications are maintained.

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1. PARAGRAPH NUMBER AND TITLE: 7−2−1. VISUAL SEPARATION

2. BACKGROUND: Since 2003, several facilities in the National Airspace System have filed for a waiver to FAA Order JO 7110.65, Paragraph 7−2−1, Visual Separation, in order to enable ATCSs to apply visual separation between their traffic and traffic at an adjacent airport traffic control tower (ATCT). This change allows the use of tower−applied visual separation between adjacent airport traffic control towers ATCTs. Seven facilities have received waivers authorizing the use of tower−applied visual separation between adjacent ATCTs. There are three additional waivers pending. Since the issuance of these waivers, there have been no reported events, such as losses of approved separation, associated with the use of tower−applied visual separation.

3. CHANGE:

OLD	NEW
7−2−1. VISUAL SEPARATION	**7−2−1. VISUAL SEPARATION**
Visual separation may be applied when other approved separation is assured before and after the application of visual separation. To ensure that other separation will exist, consider aircraft performance, wake turbulence, closure rate, routes of flight, known weather conditions, and aircraft position. Weather conditions must allow the aircraft to remain within sight until other separation exists. Visual separation is not authorized when the lead aircraft is a super.	No Change

REFERENCE– *FAA Order JO 7110.65, Para 2–1–20, Wake Turbulence Cautionary Advisories.* *FAA Order JO 7110.65, Para 2–1–21, Traffic Advisories.* *FAA Order JO 7110.65, Para 3–1–9, Use of Tower Radar Displays.* *FAA Order JO 7110.65, Para 5–9–5, Approach Separation Responsibility.* *FAA Order JO 7110.65, Para 7–4–1, Visual Approach.* *FAA Order JO 7110.65, Para 7–4–2, Vectors for Visual Approach.* *FAA Order JO 7110.65, Para 7–4–4, Approaches to Multiple Runways.* *P/CG Term–Visual Approach.* *P/CG Term–Visual Separation.*	***REFERENCE–*** *FAA Order JO 7110.65, Para 2–1–20, Wake Turbulence Cautionary Advisories.* *FAA Order JO 7110.65, Para 2–1–21, Traffic Advisories.* *FAA Order JO 7110.65, Para 3–1–9, Use of Tower Radar Displays.* *FAA Order JO 7110.65, Para 5–9–5, Approach Separation Responsibility.* *FAA Order JO 7110.65, Para 7–4–1, Visual Approach.* *FAA Order JO 7110.65, Para 7–4–2, Vectors for Visual Approach.* *FAA Order JO 7110.65, Para 7–4–4, Approaches to Multiple Runways.* ***FAA Order JO 7210.3, Para 4–3–2, Appropriate Subjects.*** ***FAA Order JO 7210.3, Para 10–3–9, Visual Separation.*** *P/CG Term–Visual Approach.* *P/CG Term–Visual Separation.*
Title through **a1(e)**	No Change
(f) Adjacent airports with operating ATCTs are not authorized to apply visual separation between their traffic and the other ATCT's traffic.	**(f) ATCTs at adjacent airports may be authorized to apply visual separation between their traffic and the other facility's traffic. All provisions of FAA Order JO 7110.65, Paragraph 7–2–1a1, still apply.**
Add	***NOTE–*** ***Additional requirements are listed in FAA Order JO 7210.3, Paragraph 10-3-9, Visual Separation.***

---

1. PARAGRAPH NUMBER AND TITLE: 7–9–4. SEPARATION

2. BACKGROUND: Paragraph d, Note 2, describes aircraft weighing 19,000 pounds or less as "all aircraft in SRS Categories I and II" as well as seven additional aircraft type designators. Since this note was first written, several additional aircraft types weighing 19,000 pounds or less have been assigned unique aircraft type designators. To make identification of these aircraft more efficient, FAA Order JO 7360.1, Aircraft Type Designators, denotes the aircraft that meet this criteria without requiring a review of the aircraft's SRS Category.

3. CHANGE:

OLD	**NEW**
7–9–4. SEPARATION	**7–9–4. SEPARATION**
Title through **d**	No Change
NOTE– ***1****. Apply the provisions of Para 5–5–4, Minima, when wake turbulence separation is required.* ***2.*** *Aircraft weighing 19,000 pounds or less include all aircraft in SRS Categories I and II plus G73, STAR, S601, BE30, SW3, B190 and C212.*	***NOTE–*** ***1.*** *Apply the provisions of Para 5–5–4, Minima, when wake turbulence separation is required.* ***2.*** *Aircraft weighing 19,000 pounds or less* ***are listed in FAA Order JO 7360.1, Aircraft Type Designators****.*
Add	***REFERENCE–*** ***FAA Order JO 7360.1, Para 2–2, How Designators are Formulated***

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