

CHANGE

**U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

**JO 7110.65AA
CHG 2**

Air Traffic Organization Policy

Effective Date:
March 21, 2024

SUBJ: Air Traffic Control

- 1. Purpose of This Change.** This change transmits revised pages to Federal Aviation Administration Order JO 7110.65AA, Air Traffic Control, and the Briefing Guide.
- 2. Audience.** This change applies to all Air Traffic Organization (ATO) personnel and anyone using ATO directives.
- 3. Where Can I Find This Change?** This change is available on the FAA website at http://faa.gov/air_traffic/publications and https://employees.faa.gov/tools_resources/orders_notices/.
- 4. Explanation of Policy Change.** See the Explanation of Changes attachment that has editorial corrections and changes submitted through normal procedures. The Briefing Guide lists only new or modified material, along with background.
- 5. Distribution.** This change is distributed to select offices in Washington headquarters, service area offices, the William J. Hughes Technical Center, the Mike Monroney Aeronautical Center, air traffic field facilities, and international aviation offices. This change is distributed electronically to all who subscribe to receive email notification through the FAA's website. All organizations are responsible for viewing, downloading, and subscribing to receive email notifications when changes occur to this order. Subscriptions to air traffic directives can be made through the Air Traffic Plans and Publications website at https://www.faa.gov/air_traffic/publications/ or directly via the following link: https://public.govdelivery.com/accounts/USAFAA/subscriber/new?topic_id=USAFAA_39.
- 6. Disposition of Transmittal.** Retain this transmittal until superseded by a new basic order.
- 7. Page Control Chart.** See the page control chart attachment.

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Explanation of Changes

Change 2

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

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

3-10-5. LANDING CLEARANCE

3-10-10. ALTITUDE RESTRICTED LOW APPROACH

This change removes use of the word “unrestricted” associated with low approach in FAA Order JO 7110.65, Air Traffic Control, paragraphs 3-9-4, Line Up and Wait (LUAW), and 3-10-5, Landing Clearance. An “unrestricted” low approach is itself a low approach; the term “unrestricted” is not deemed necessary. Additional edits were made to enhance the distinction between aircraft holding on a runway (for example, an aircraft authorized holding on the runway for an engine run-up) and an aircraft authorized LUAW.

b. 3-9-8. INTERSECTING RUNWAY/INTERSECTING FLIGHT PATH OPERATIONS

3-10-4. INTERSECTING RUNWAY/INTERSECTING FLIGHT PATH SEPARATION

This change adds the provisions of the Land and Hold Short Operations (LAHSO) order to FAA Order JO 7110.65 as it pertains to the authorized circumstances of how LAHSO is used.

c. 5-1-2. ATC SURVEILLANCE SOURCE USE

This change clarifies that the provisions of subparagraph 5-1-2a are not applicable when operating in FUSION, except when required by facility directive.

d. 5-2-11. CODE MONITOR

This change adds dedicated beacon code 1203 to other visual flight rules (VFR) codes that are specifically monitored by ATC.

e. 5-2-15. VALIDATION OF MODE C ALTITUDE READOUT

This change corrects the subject of the sentences in subparagraphs 5-2-15e and 5-2-15f to improve clarity by modifying the sentence structure to more accurately describe the conditions being addressed.

f. 5-7-2. METHODS

This change to paragraph 5-7-2 permits speed adjustments of a specified number of knots to be expressed in group form and single-digit form for adjustments to specified speed in knots.

g. 8-1-10. PROCEDURES FOR WEATHER DEVIATIONS AND OTHER CONTINGENCIES IN OCEANIC-CONTROLLED AIRSPACE

8-7-5. PROCEDURES FOR WEATHER DEVIATIONS IN NORTH ATLANTIC (NAT) AIRSPACE

8-9-5. PROCEDURES FOR WEATHER DEVIATIONS AND OTHER CONTINGENCIES IN OCEANIC CONTROLLED AIRSPACE

This change removes the “Procedures for Weather Deviations and Other Contingencies in Oceanic-Controlled” paragraphs from Sections 7 and 9 and places language into Section 1, General, which will make it clear that the necessary guidance is applicable to all ICAO regions containing oceanic-controlled airspace.

h. 9-2-5. FLYNET

These changes remove references to the term FLYNET in the remarks section of a flight plan and add information that the code word FLYNET will be used in conjunction with the aircraft call sign to request priority handling of a nuclear/radiological or potential nuclear/radiological event.

i. Editorial Changes

Editorial changes include updates to references to Automated Information Transfer procedures in JO 7210.3; a change removing the term “appropriate stratum” from subparagraph 10-4-4c2; a removal of the acronym

STR for Strategic Training Routes, to not conflict with Standard Taxi Routes; a subparagraph reference correction in subparagraph 3–9–6e; updates to references to the Chart Supplement throughout the order; a simple reference correction in paragraphs 5–2–14 and 5–2–22; adding references and links to relevant Interpretations throughout the order; an update to the abbreviation for West Atlantic Route System (WATRS) to its new name, West Atlantic (WAT); correcting the spelling of “Juliet” to “Juliett” throughout; and replacing Operations–Headquarters, AJT–2 with their current office name as Operational Policy and Implementation, AJT–2.

j. 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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b. If a request does not require an interpretation but further clarification is needed it must be forwarded to the Service Center Operations Support Group for a response.

1. The Service Center Operations Support Group may consult with the Policy Directorate when preparing their response.

2. The Service Center Operations Support Group must provide a written response to the requestor and forward the response to the Policy Directorate.

c. Interpretation requests from all other sources must be submitted to the Policy Directorate at 9-AJV-P-HQ-Correspondence@faa.gov.

NOTE–

Interpretations can be accessed through the Air Traffic Control Interpretation link at the following website: https://my.faa.gov/org/linebusiness/ato/mission_support/psgroup/atc_interpretations.html.

1–1–10. PROCEDURAL LETTERS OF AGREEMENT (LOA)

Procedures/minima which are applied jointly or otherwise require the cooperation or concurrence of more than one facility/organization must be documented in a letter of agreement. LOAs only supplement this order. Any minima they specify must not be less than that specified herein unless appropriate military authority has authorized application of reduced separation between military aircraft.

REFERENCE–

FAA Order JO 7110.65, Para 2–1–1, ATC Service.

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

1–1–11. CONSTRAINTS GOVERNING SUPPLEMENTS AND PROCEDURAL DEVIATIONS

a. Exceptional or unusual requirements may dictate procedural deviations or supplementary procedures to this order. Prior to implementing supplemental or any procedural deviation that alters the level, quality, or degree of service, obtain prior approval from the Vice President, Mission Support Services.

b. If military operations or facilities are involved, prior approval by the following appropriate headquarters is required for subsequent interface with FAA. (See TBL 1–1–3.)

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

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

b. This order is distributed electronically to all who subscribe to receive email notifications through the FAA's website. All organizations are responsible for viewing, downloading, and subscribing to receive email notifications when changes occur to this order. Subscriptions to air traffic directives can be made through the Air Traffic Plans and Publications website at https://www.faa.gov/air_traffic/publications/ or directly via the following link: https://public.govdelivery.com/accounts/USAFAA/subscriber/new?topic_id=USAFAA_39.

Abbreviation	Meaning
SAR	Search and rescue
SATCOM . . .	Satellite Communication
SDP	Surveillance Data Processing
SELCAL	Selective Calling System
SFA	Single frequency approach
SFO	Simulated flameout
SID	Standard Instrument Departure
SIGMET	Significant meteorological information
SPA	Special Posting Area
SPECI	Nonroutine (Special) Aviation Weather Report
STAR	Standard terminal arrival
STARS	Standard Terminal Automation Replacement System
STMC	Supervisory Traffic Management Coordinator
STMCIC	Supervisory Traffic Management Coordinator-in-charge
STOL	Short takeoff and landing
SURPIC	Surface Picture
SVFR	Special Visual Flight Rules
TAA	Terminal arrival area
TAS	Terminal Automation Systems
TACAN	TACAN UHF navigational aid (omnidirectional course and distance information)
TAWS	Terrain Awareness Warning System
TCAS	Traffic Alert and Collision Avoidance System
TCDD	Tower cab digital display
TDLS	Terminal Data Link System
TDW	Tower display workstation
TDWR	Terminal Doppler Weather Radar
TDZL	Touchdown Zone Light System
TF	Track-to-Fix

Abbreviation	Meaning
TFMS	Traffic Flow Management System
TMC	Traffic Management Coordinator
TMU	Traffic Management Unit
TRACON	Terminal Radar Approach Control
TRSA	Terminal radar service area
UFO	Unidentified flying object
UHF	Ultra high frequency
USA	United States Army
USAF	United States Air Force
USN	United States Navy
UTC	Coordinated universal time
UTM	Unsuccessful transmission message
UUA	Urgent pilot weather report
VCI	Voice Communication Indicator
VFR	Visual flight rules
VHF	Very high frequency
VMC	Visual meteorological conditions
VNAV	Vertical Navigation
VOR	VHF navigational aid (omnidirectional course information)
VOR/DME . . .	Collocated VOR and DME navigational aids (VHF course and UHF distance information)
VORTAC	Collocated VOR and TACAN navigation aids (VHF and UHF course and UHF distance information)
VR	VFR military training route
VSCS	Voice Switching and Control System
WAAS	Wide Area Augmentation System
WARP	Weather and Radar Processing
WAT	West Atlantic
WRA	Weather Reconnaissance Area
WSO	Weather Service Office
WSP	Weather System Processor
WST	Convective SIGMET

Chapter 2. General Control

Section 1. General

2-1-1. ATC SERVICE

- a. The primary purpose of the ATC system is to prevent a collision involving aircraft operating in the system.
- b. In addition to its primary purpose, the ATC system also:
 1. Provides a safe, orderly, and expeditious flow of air traffic.
 2. Supports National Security and Homeland Defense missions.
- c. The ATC system must provide certain additional services to the extent permitted. The provision of additional services is not optional on the part of the controller, but rather required when the work situation permits. It is recognized that the provision of these services may be precluded by various factors, including, but not limited to:
 1. Volume of traffic.
 2. Frequency congestion.
 3. Quality of surveillance.
 4. Controller workload.
 5. Higher priority duties.
 6. The physical inability to scan and detect situations falling in this category.
- d. Controllers must provide air traffic control service in accordance with the procedures and minima in this order, except when one or more of the following conditions exists:
 1. A deviation is necessary to conform with ICAO Documents, National Rules of the Air, or special agreements where the U.S. provides air traffic control service in airspace outside the U.S. and its possessions or:

NOTE—

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

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

NOTE—

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

REFERENCE—

FAA Order JO 7110.65, Para 1-1-10, Procedural Letters of Agreement (LOA).

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

REFERENCE—

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

FAA Order JO 7110.65, Chapter 10, Emergencies.

FAA Order JO 7110.65, Para 5-1-4, Merging Target Procedures.

INTERPRETATION—

[7110.65, 2-1-1 c, ATC Service; Emergencies and 10-1-1 d, Emergency Determinations \(6-11-2015\)](#)

- e. Air Traffic Control services are not provided for model aircraft operating in the NAS or to any UAS operating in the NAS at or below 400ft AGL.

NOTE–

1. This does not prohibit ATC from providing services to civil and public UAS.
2. The provisions of this paragraph apply to model aircraft operating at any altitude. For all other UAS, this paragraph applies only to those UAS operating entirely at or below 400ft AGL.

REFERENCE–

P/CG Term – Model Aircraft.

2–1–2. DUTY PRIORITY

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

REFERENCE–

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

NOTE–

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

- b. Provide support to national security and homeland defense activities to include, but not be limited to, reporting of suspicious and/or unusual aircraft/pilot activities.

REFERENCE–

FAA Order JO 7610.4, Sensitive Procedures and Requirements for Special Operations.

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

NOTE–

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

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

2–1–3. PROCEDURAL PREFERENCE

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

- b. Use automation procedures that provide closed loop clearances in preference to open loop clearances to promote operational advantage for time-based management (TBM) when workload permits. (e.g., a QU route pick that anticipates length of vector and includes the next fix that ties into the route of flight.)

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

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

NOTE–

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

2–1–4. OPERATIONAL PRIORITY

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

NOTE–

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

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

REFERENCE–

14 CFR Section 91.113(c).

- b. Treat air ambulance flights as follows:

1. Provide priority handling to civil air ambulance flights when the pilot, in radio transmissions, verbally identifies the flight by stating “MEDEVAC” followed by the FAA authorized call sign or the full civil registration letters/numbers. Good judgment must be used in each situation to facilitate the most expeditious movement of a MEDEVAC aircraft.

NOTE–

If a flight plan includes the letter “L” for “MEDEVAC” and/or includes “MEDEVAC” in Item 11 (Remarks) of the flight plan or Item 18 (Other Information) of an international flight plan, the entries are considered informational in nature only and not an identification for operational priority.

REFERENCE–

FAA Order JO 7110.65, Para 2–4–20, Aircraft Identification.

2. Provide priority handling to AIR EVAC and HOSP flights when verbally requested by the pilot.

NOTE–

If a flight plan includes “HOSP” or “AIR EVAC” in either Item 11 (Remarks) or Item 18 (Other Information) of an international flight plan, the entries are considered informational in nature only and not an identification for operational priority. For aircraft identification in radio transmissions, civilian pilots will use normal call signs when filing “HOSP” and military pilots will use the “EVAC” call sign.

3. Assist the pilots of MEDEVAC, AIR EVAC, and HOSP aircraft to avoid areas of significant weather and adverse conditions.

4. If requested by a pilot, provide additional assistance (i.e., landline notifications) to expedite ground handling of patients, vital organs, or urgently needed medical materials.

- c. Provide priority handling and expedite the movement of presidential aircraft and entourage and any rescue support aircraft as well as related control messages when traffic conditions and communications facilities permit.

NOTE–

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

REFERENCE–

FAA Order JO 7110.65, Para 2–4–20, Aircraft Identification.

FAA Order JO 7110.65, Para 4–3–2, Departure Clearances.

FAA Order JO 7210.3, Para 5–1–1, Advance Coordination.

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

REFERENCE–

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

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

- f. Provide priority handling to NIGHT WATCH “NAOC” (pronounced NAY–OCK) aircraft when notified via landline or when “NAOC” is used in air/ground communications. When the term “NAOC” is used, approve any request(s) as soon as practicable.

NOTE–

The term “NAOC” will not be a part of the Flight ID in the flight plan or used in conjunction with the call sign but may otherwise be used when the aircraft is airborne.

REFERENCE–

FAA Order JO 7610.4, Para 9–1–1, Applications.

- g.** Provide priority handling to any civil or military aircraft using the code name “FLYNET.”

REFERENCE–

FAA Order JO 7110.65, Para 9–2–5, FLYNET.

FAA Order JO 7610.4, Para 9–4–1, “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 or other government aircraft engaged in aerial sampling/surveying missions using the call sign “SAMP.”

REFERENCE–

FAA Order JO 7110.65, Para 9–2–17, SAMP Flights.

FAA Order JO 7210.3, Para 5–3–2, Aerial Sampling/Surveying For Airborne Contamination.

- j.** Provide priority handling to Special Air Mission “SCOOT” aircraft when notified via landline or when “SCOOT” is used in air/ground communications. When the term “SCOOT” is used, approve any request(s) as soon as practicable.

NOTE–

The term “SCOOT” will not be a part of the Flight ID in the flight plan but may be used during radio communications in conjunction with the call sign.

REFERENCE–

FAA Order JO 7610.4, Para 9–6–1, Applications.

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

REFERENCE–

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

- l.** 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.

- m.** IFR aircraft must have priority over SVFR aircraft.

REFERENCE–

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

- n.** Aircraft operating under the North American Route Program (NRP) 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.

- o.** 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.

- p.** 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 paragraph 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 Juliett, 12’o clock, 1 mile advise you turn left immediately.”

or

“Traffic Alert, Cessna Three-Four Juliett, 12’o clock, 1 mile advise you turn left and climb immediately.”

REFERENCE–

FAA Order JO 7110.65, Para 5–13–1, Conflict Alert (CA) and Mode C Intruder (MCI) Alert.

FAA Order JO 7110.65, Para 5–13–2, En Route Minimum Safe Altitude Warning (E–MSAW).

FAA Order JO 7110.65, Para 5–14–6, CA/MCI.

FAA Order JO 7110.65, Para 5–2–21, Altitude Filters.

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

2–1–7. INFLIGHT EQUIPMENT MALFUNCTIONS

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

NOTE–

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

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

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

2–1–8. MINIMUM FUEL

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

NOTE–

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

2–1–9. REPORTING ESSENTIAL FLIGHT INFORMATION

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

NOTE–

FSSs are responsible for classifying and disseminating Notices to Air Missions.

REFERENCE–

FAA Order JO 7110.65, Para 3–3–3, Timely Information.

FAA Order JO 7210.3, Para 3–1–2, Periodic Maintenance.

USN, See OPNAVINST 3721.30.

2–1–10. NAVAID MALFUNCTIONS

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

1. Request a report from a second aircraft.

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

Section 2. Flight Plans and Control Information

2-2-1. RECORDING INFORMATION

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

NOTE—

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

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

REFERENCE—

FAA Order JO 7110.65, Para 2-3-2, En Route Data Entries.

2-2-2. FORWARDING INFORMATION

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

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

NOTE—

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

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

2-2-3. FORWARDING VFR DATA

TERMINAL

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

2-2-4. MILITARY DVFR DEPARTURES

TERMINAL

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

NOTE—

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

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

2-2-5. IFR TO VFR FLIGHT PLAN CHANGE

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

2-2-6. IFR FLIGHT PROGRESS DATA

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

NOTE-

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

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

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

1. Aircraft identification.
2. Number of aircraft if more than one, heavy aircraft indicator "H/" if appropriate, type of aircraft, and aircraft equipment suffix.
3. Assigned altitude and ETA over last reporting point/fix in transferring facility's area or assumed departure time when the departure point is the last point/fix in the transferring facility's area.
4. Altitude at which aircraft will enter the receiving facility's area if other than the assigned altitude.
5. True airspeed.
6. Point of departure.
7. Route of flight remaining.
8. Destination airport and clearance limit if other than destination airport.
9. ETA at destination airport (not required for military or scheduled air carrier aircraft).
10. Altitude requested by the aircraft if assigned altitude differs from requested altitude (within a facility only).

NOTE-

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

REFERENCE-

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

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

NOTE-

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

REFERENCE-

FAA Order JO 7110.65, Para 2-2-II, Forwarding Amended and UTM Data.

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

5. Instrument approach and runway in use.

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 2–1–30, 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 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 canceled 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 Flight Service Frequencies. Advise on initial contact you have Delta.”

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 Runway 18L.”

“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 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 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 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),

traffic information to any aircraft so authorized. Traffic information may be omitted when the traffic is another aircraft which has landed on or is taking off the runway and is clearly visible to the holding aircraft. Do not use conditional phrases such as “behind landing traffic” or “after the departing aircraft.”

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

PHRASEOLOGY–

RUNWAY (number), LINE UP AND WAIT.

NOTE–

When using LUAW, an imminent departure is one that will not be delayed beyond the time that is required to ensure a safe operation. An aircraft should not be in LUAW status for more than 90 seconds without additional instructions.

- c. Procedures.

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

(a) Do not clear an aircraft for a full-stop, touch-and-go, stop-and-go, low approach, or option on the same runway with an aircraft holding in position or taxiing to LUAW until the aircraft in position has exited the runway or starts takeoff roll.

PHRASEOLOGY–

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

or

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

EXAMPLE–

“American 528, Runway Two–Three continue, traffic holding in position.”

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

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

REFERENCE–

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

(b) Do not authorize an aircraft to LUAW if an aircraft has been cleared for a full-stop, touch-and-go, stop-and-go, low approach, or option 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 clearance for a full-stop, touch-and-go, stop-and-go, low approach, or option on the same runway with an aircraft holding in position or taxiing to LUAW, or

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

REFERENCE–

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

d. When an aircraft is authorized to LUAW, inform it of the closest traffic within 6 flying miles requesting a full-stop, touch-and-go, stop-and-go, low approach, or option 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.

1. *USAF/USN*. When issuing additional instructions or information to an aircraft holding in 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 is updated to include the change(s).

NOTE–

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

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

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

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

PHRASEOLOGY–

RUNWAY (number) SHORTENED, LINE UP AND WAIT.

EXAMPLE–

“Runway Two–Seven shortened, line up and wait.”

REFERENCE–

FAA Order JO 7210.3, Para 10-3-12, *Airport Construction.*

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

3–9–5. ANTICIPATING SEPARATION

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

REFERENCE–

P/CG Term – Clear of the Runway.

3–9–6. SAME RUNWAY SEPARATION

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

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

1. When only Category I aircraft are involved— 3,000 feet.
2. When a Category I aircraft is preceded by a Category II aircraft— 3,000 feet.
3. When either the succeeding or both are Category II aircraft— 4,500 feet.
4. When either is a Category III aircraft— 6,000 feet.
5. When the succeeding aircraft is a helicopter, visual separation may be applied in lieu of using distance minima.

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

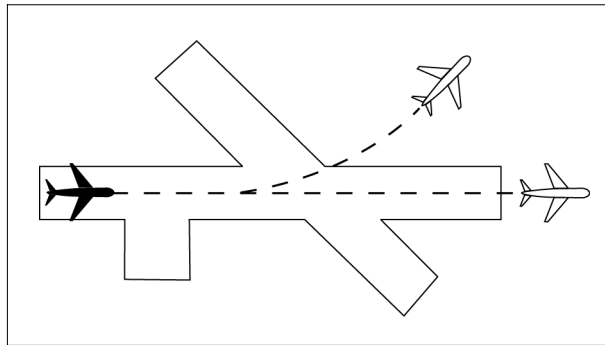
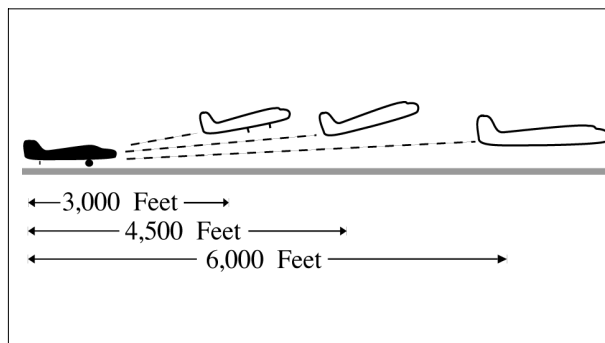


FIG 3-9-2
Same Runway Separation
[View 2]



NOTE—

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

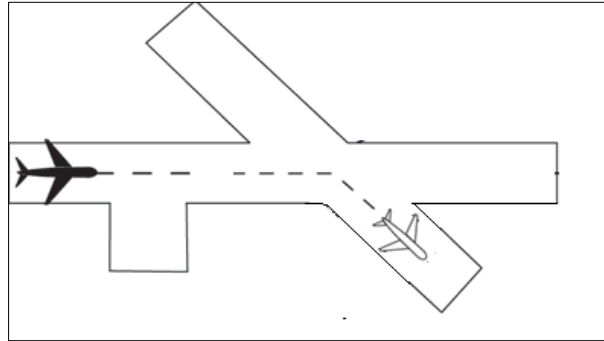
CATEGORY I — small single-engine propeller driven aircraft weighing 12,500 lbs. or less, and all helicopters.

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

REFERENCE-

FAA Order JO 7210.3, Para 2-1-16, Authorization for Separation Services by Towers.

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

NOTE-

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

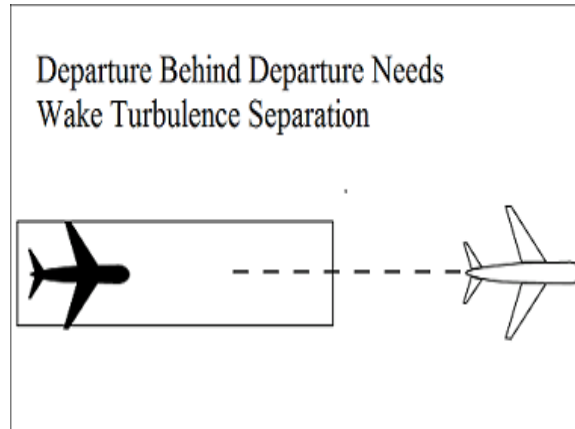
2. Takeoff clearance to the following aircraft should not be issued until the time interval has passed after the preceding aircraft begins takeoff roll.

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

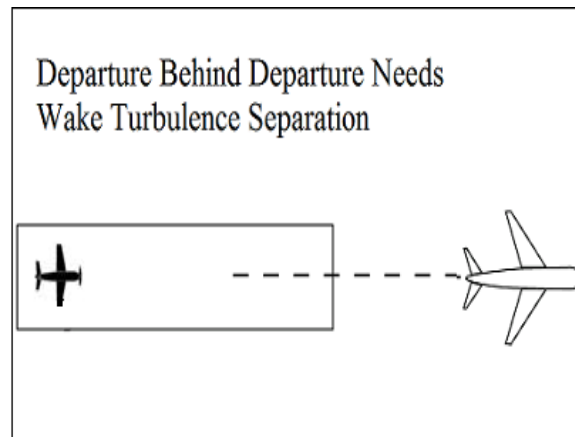
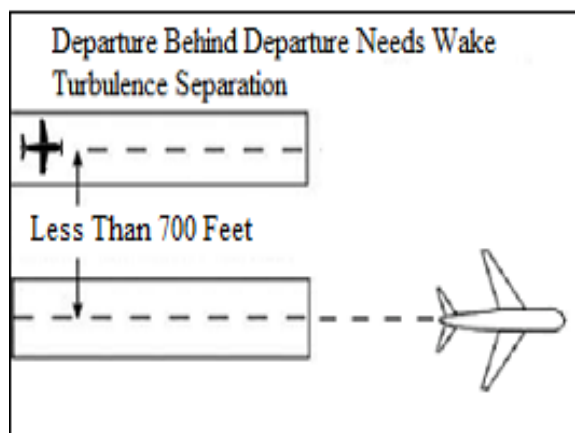


FIG 3-9-6
Parallel Runway Separated by Less than 700 Feet



NOTE–

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

REFERENCE–

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

b. The time interval is not required when:

1. A pilot has initiated a request to deviate from the time intervals contained in subparagraph a1 or a2.

NOTE–

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

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

3. Successive touch-and-go or stop-and-go operations are conducted with any aircraft following an aircraft in the pattern that requires wake turbulence separation, or an aircraft departing the same runway that requires wake turbulence separation in accordance with subparagraphs a1, a2, a3, or a4 (except for super aircraft), provided the pilot is maintaining visual separation/spacing behind the preceding aircraft. Issue a wake turbulence cautionary advisory and the position of the larger aircraft.

NOTE–

Not authorized with a Super as the lead or departure aircraft.

REFERENCE–

FAA Order JO 7110.65, Para 5–5–4, Minima, subpara g.

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

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

c. When applying the provision of subparagraph b:

1. Issue a wake turbulence advisory before clearing the aircraft for takeoff.
2. Do not clear the intersection departure for an immediate takeoff.
3. Issue a clearance to permit the trailing aircraft to deviate from course enough to avoid the flight path of the preceding aircraft when applying subparagraph b1 or b2.
4. Separation requirements in accordance with paragraph 3–9–6, Same Runway Separation, must also apply.

REFERENCE–

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

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

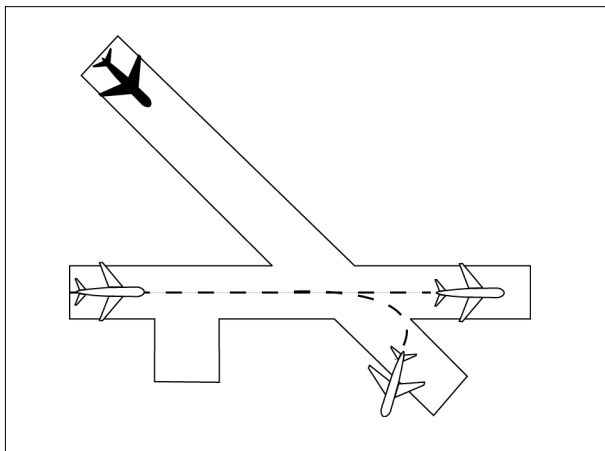
- a.** Issue traffic information to each aircraft operating on intersecting runways.
- b.** Separate departing aircraft from another aircraft using an intersecting runway by ensuring that the departure does not begin takeoff roll until one of the following exists:

REFERENCE–

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

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

FIG 3-9-9
Intersecting Runway Separation



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

- (a) Is clear of the landing runway, or
- (b) Has completed the landing roll on the runway and will hold short of the intersection, or
- (c) Has landed and will hold short of an intersecting runway, intersecting taxiway, intersecting approach/departure flight path, or other predetermined point in accordance with the Land and Hold Short Operations (LAHSO) directive, or
- (d) Has completed the landing roll and is observed turning at an exit point prior to the intersection, or
- (e) Has passed the intersection.

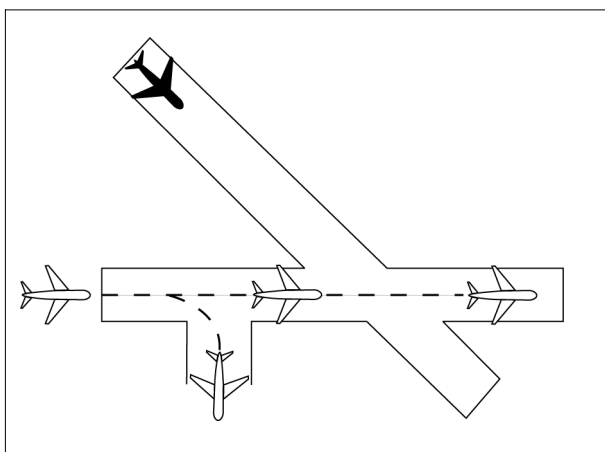
REFERENCE-

FAA Order 7110.118, *Land and Hold Short Operations (LAHSO)*.

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

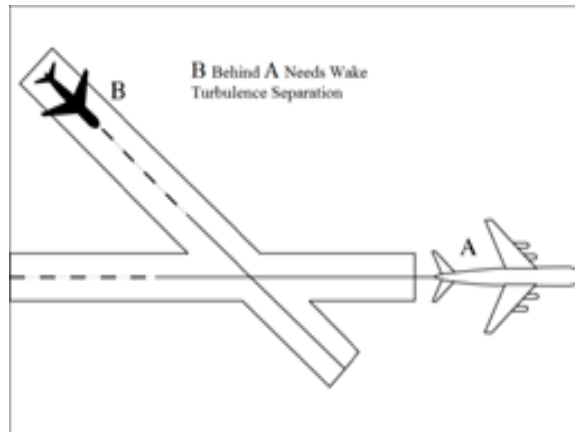
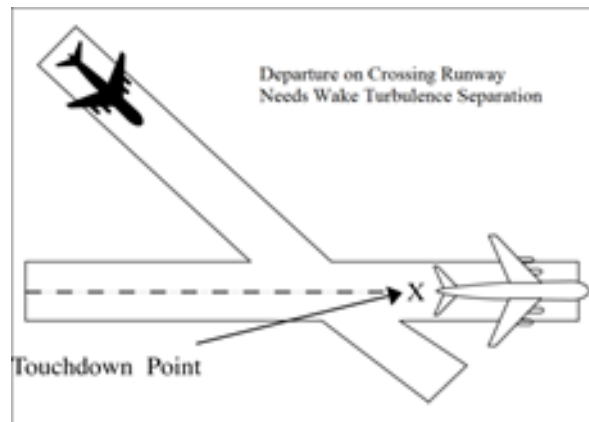
Departure Behind Departure on Intersecting Runway

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, Subpara g.

3-9-9. NONINTERSECTING CONVERGING RUNWAY OPERATIONS

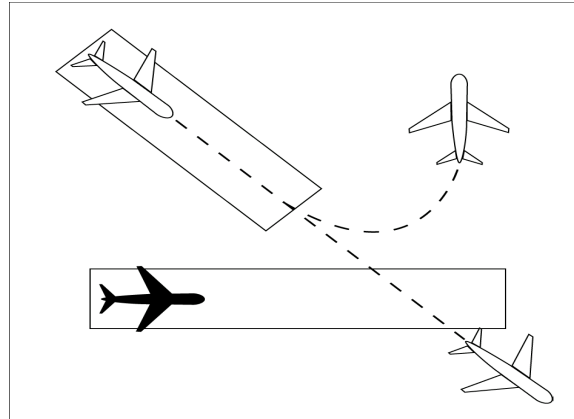
a. Separate departing aircraft from an aircraft using a nonintersecting runway when the flight paths intersect by ensuring that the departure does not begin takeoff roll until one of the following exists:

REFERENCE–

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

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

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

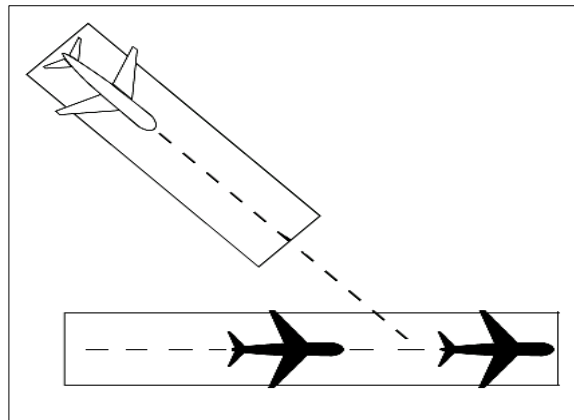
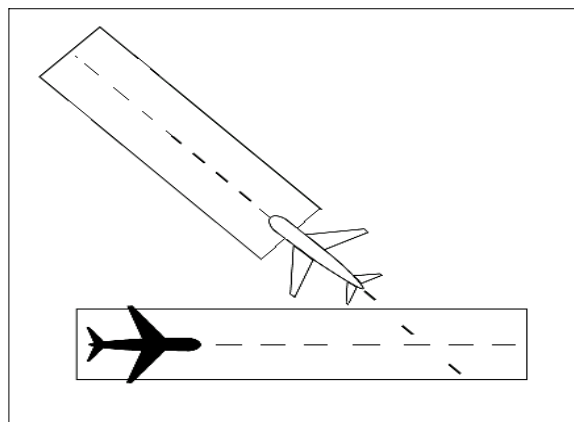


FIG 3-9-15
Intersecting Runway Separation



b. If the extended centerline of a runway crosses a converging runway or the extended centerline of a converging runway at a distance of 1 NM or less from either departure end, apply the provisions of paragraph

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–

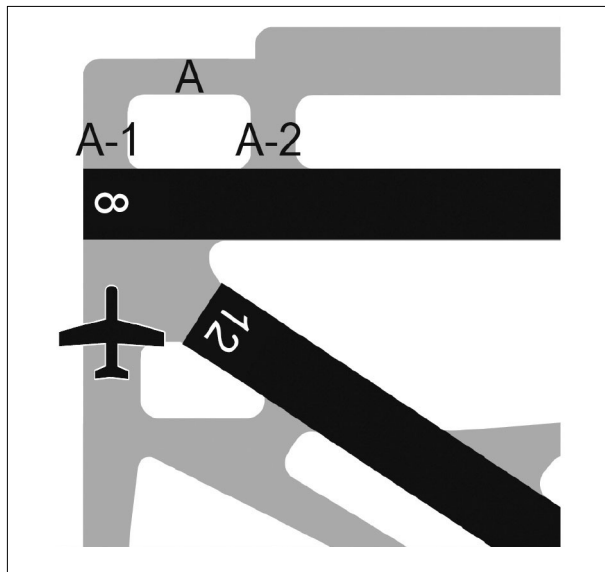
RUNWAY (number), FULL LENGTH, CLEARED FOR TAKEOFF.

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.

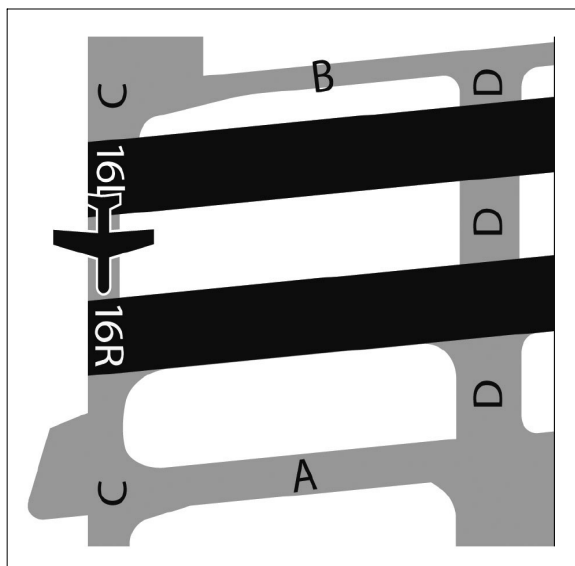
PHRASEOLOGY–

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 is updated to include the change(s).

NOTE-

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

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

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

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

PHRASEOLOGY-

RUNWAY (number) SHORTENED, CLEARED FOR TAKEOFF.

EXAMPLE-

“Runway Two-Seven shortened, cleared for takeoff.”

PHRASEOLOGY-

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

EXAMPLE-

“Runway Two-Seven at Juliett, intersection departure shortened, cleared for takeoff.”

REFERENCE-

FAA Order JO 7210.3, Para 10-3-12, Airport Construction.

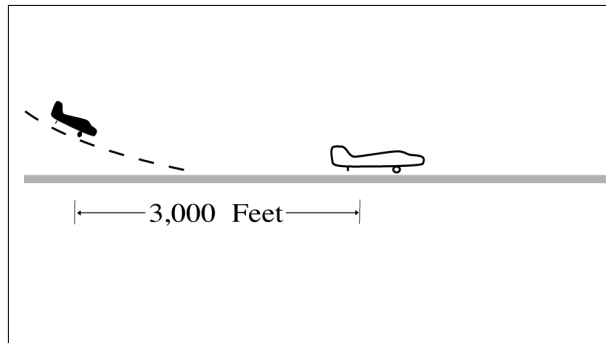
FAA Order JO 7210.3, Para 10-3-13, Change in Runway Length Due to Construction.

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

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

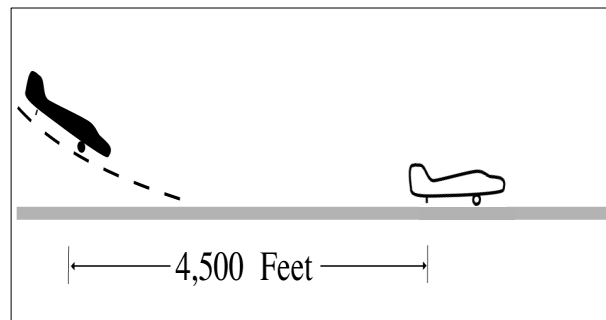
- (a) When a Category I aircraft is landing behind a Category I or II— *3,000 feet*.
(See FIG 3–10–2.)

FIG 3–10–2
Same Runway Separation



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

FIG 3–10–3
Same Runway Separation



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

- (a) Category I aircraft landing behind Category I or II— *3,000 feet*.
- (b) Category II aircraft landing behind Category I or II— *4,500 feet*.
- (c) When either is a category III aircraft— *6,000 feet*. (See FIG 3–10–5.)

FIG 3–10–4
Same Runway Separation

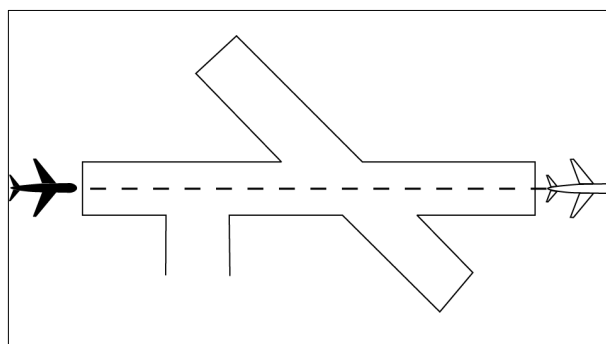
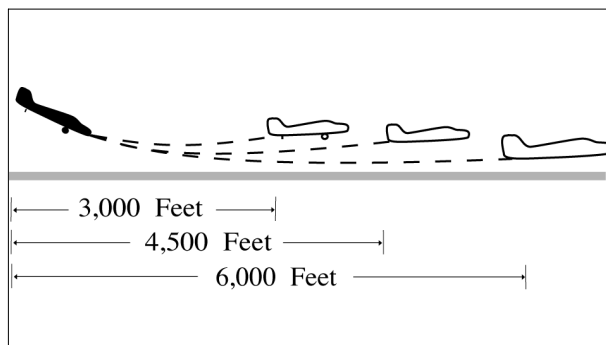


FIG 3-10-5
Same Runway Separation



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

WAKE TURBULENCE APPLICATION

b. Issue wake turbulence advisories, and the position, altitude if known, and the direction of flight of:

1. The super or heavy to aircraft landing behind a departing/arriving super or heavy on the same or parallel runways separated by less than 2,500 feet.

2. The B757/large aircraft to a small aircraft landing behind a departing/arriving B757/large aircraft on the same or parallel runways separated by less than 2,500 feet.

REFERENCE—

AC 90-23, *Aircraft Wake Turbulence, Para 12, Pilot Responsibility.*

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

EXAMPLE—

1. “Runway two seven left cleared to land, caution wake turbulence, heavy Boeing 747 departing runway two seven right.”

2. “Number two follow Boeing 757 on 2-mile final. Caution wake turbulence.”

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

3-10-4. INTERSECTING RUNWAY/INTERSECTING FLIGHT PATH OPERATIONS

Issue traffic information to each aircraft operating on intersecting runways.

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

REFERENCE—

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

INTERPRETATION—

[7110.65, 3-10-4, Intersecting Runway/Intersecting Flight Path Separation and 5-5-4, Minima \(2021-06-09\)](#)

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

FIG 3-10-6
Intersecting Runway Separation

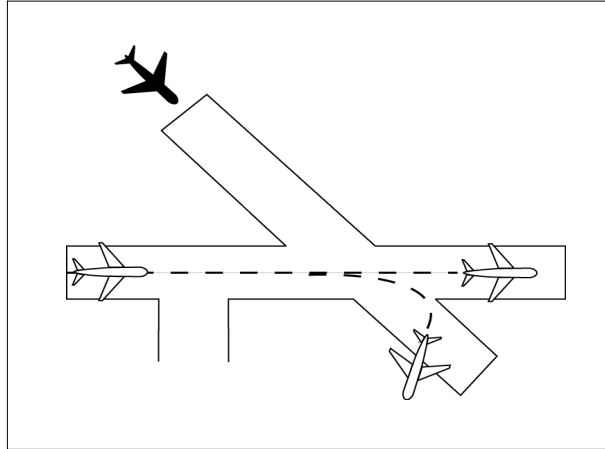
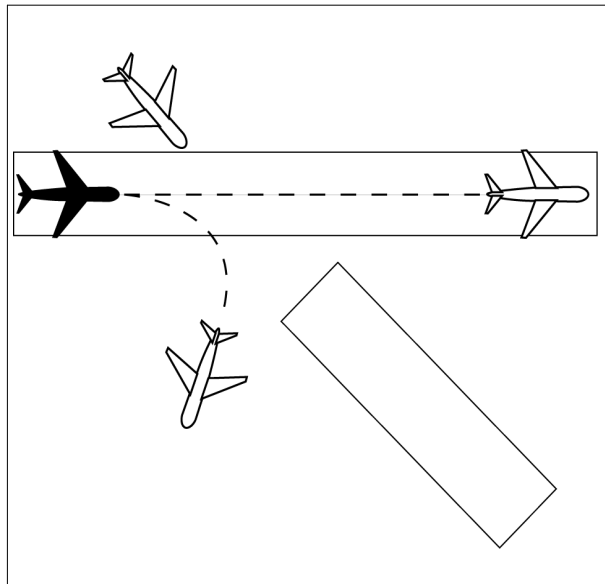


FIG 3-10-7
Intersecting Runway Separation



2. A preceding arriving aircraft is clear of the landing runway, completed landing roll and will hold short of the intersection/flight path, or has passed the intersection/flight path. (See FIG 3-10-8 and FIG 3-10-9.)

FIG 3-10-8
Intersection Runway Separation

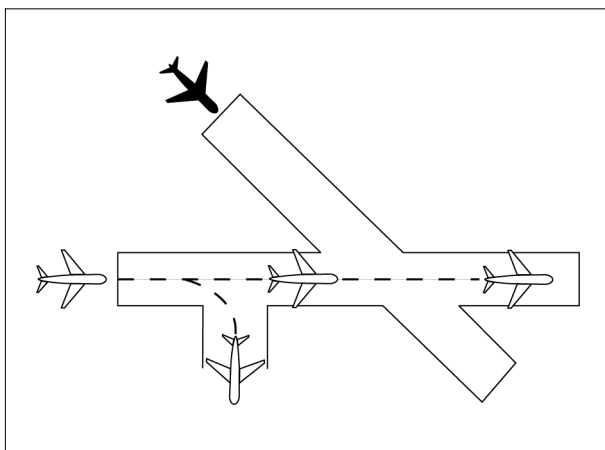
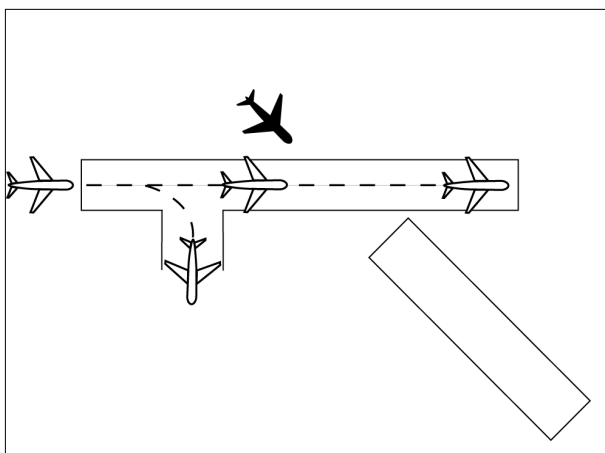


FIG 3-10-9
Intersection Runway Separation



NOTE—

When visual separation is being applied by the tower, appropriate control instructions and traffic advisories must be issued to ensure go around or missed approaches avert any conflict with the flight path of traffic on the other runway.

REFERENCE—

FAA Order JO 7110.65, Para 7-2-1, Visual Separation, Subpara a2.

b. “USA/USAF/USN NOT APPLICABLE.” An arriving aircraft may be authorized to land and hold short of an intersecting runway, an intersecting taxiway, an intersecting approach/departure flight path, or other predetermined point in accordance with procedures specified in the LAHSO directive. The following conditions apply:

NOTE—

Application of these procedures does not relieve controllers from the responsibility of providing other appropriate separation contained in this order.

REFERENCE—

FAA Order 7110.118, Land and Hold Short Operations (LAHSO).

FAA Order JO 7210.3, Para 10-3-7, Land and Hold Short Operations (LAHSO).

1. A simultaneous takeoff and landing operation must only be conducted in VFR conditions.

2. Instruct the landing aircraft to hold short of the intersecting runway being used by the aircraft taking off. In the case of simultaneous landings and no operational benefit is lost, restrict the aircraft of the lesser weight category (if known). LAHSO clearances must only be issued to aircraft that are 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 subparagraphs 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):

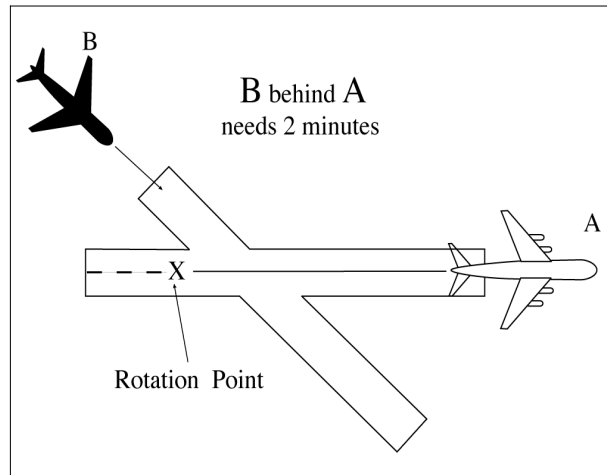
- 1.** Heavy, large, or small behind super – 3 minutes.
- 2.** Heavy, large, or small behind heavy – 2 minutes.
- 3.** Small behind B757 – 2 minutes.

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

REFERENCE—

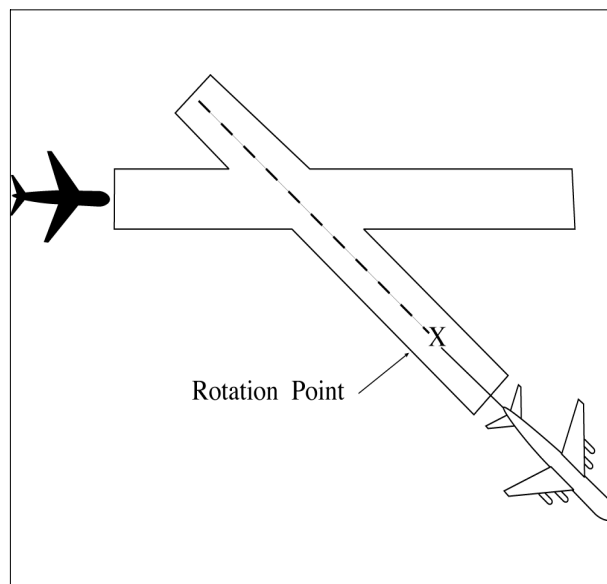
AC 90–23, *Aircraft Wake Turbulence, Para 11, Pilot Responsibility.*

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.)

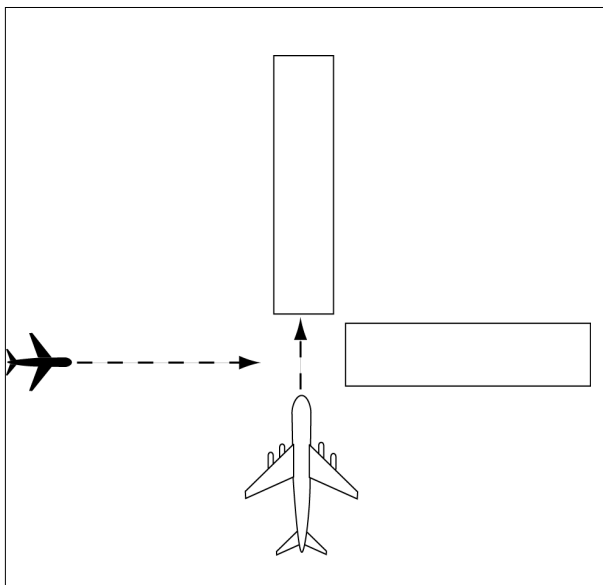
FIG 3–10–11
Intersecting Runway Separation

**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 paths will cross. (See FIG 3–10–12.)

FIG 3-10-12
Intersecting Runway Separation



EXAMPLE–

“Runway niner cleared to land. Caution wake turbulence, Boeing Seven Fifty Seven landing runway three six.”

REFERENCE–

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

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

EXAMPLE–

“United four twenty three, go-around, you appear to be aligned with the wrong runway.”

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

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

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

EXAMPLE–

“Twin Cessna four one four lima bravo, verify you are aligned with Runway 27 Left.”

REFERENCE–

FAA Order JO 7110.65, Para 3–6–4, *Safety Logic Alert Responses*.

FAA Order JO 7110.65, Para 3–10–8, *Withholding Landing Clearance*.

c. Procedures.

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

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

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

EXAMPLE–

“Delta One, Runway One–Eight, continue, traffic holding in position.”

“Delta One, Runway One–Eight, cleared to land. Traffic holding in position.”

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

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

e. 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.

f. 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 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.”

g. 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 3–10–5c2. 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 no less than 500 feet above the airport may be authorized except over an aircraft holding in position or a departing aircraft. Do not clear aircraft for restricted altitude low approaches over personnel unless airport authorities have advised these personnel that the approaches will be conducted. Advise the approaching aircraft of the location of applicable ground traffic, personnel, or equipment.

NOTE–

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

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

PHRASEOLOGY–

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

REFERENCE–

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

FAA Order JO 7110.65, Para 3–1–6, Traffic Information.

FAA Order JO 7110.65, Para 3–2–1, Light Signals.

FAA Order JO 7110.65, Para 3–3–3, Timely Information.

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

FAA Order JO 7110.65, Para 3–10–3, Same Runway Separation.

3-10-11. CLOSED TRAFFIC

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

PHRASEOLOGY–

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

or

UNABLE CLOSED TRAFFIC, (additional information as required).

NOTE–

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

REFERENCE–

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

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

FAA Order JO 7110.65, Para 3-10-3, Same Runway Separation.

3-10-12. OVERHEAD MANEUVER

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

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

PHRASEOLOGY–

PATTERN ALTITUDE (altitude). RIGHT TURNS.

b. Request for report on initial approach.

PHRASEOLOGY–

REPORT INITIAL.

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

PHRASEOLOGY–

BREAK AT (specified point).

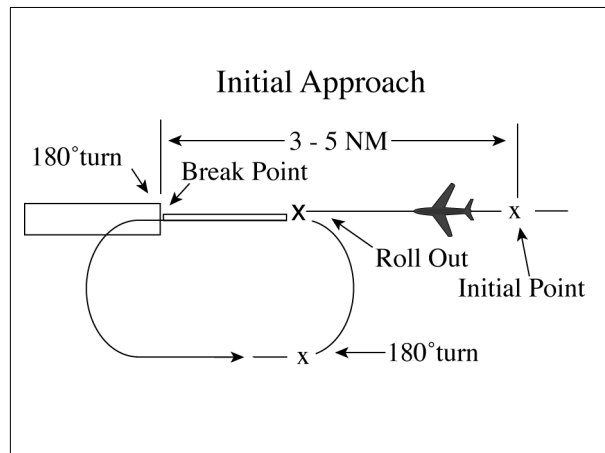
REPORT BREAK.

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

NOTE–

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

FIG 3-10-13
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.)

(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.*

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 paragraph 4–2–1, Clearance Items, and paragraph 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 paragraph 10–2–7, VFR Aircraft In Weather Difficulty, or paragraph 10–2–9, Radar Assistance Techniques, as necessary.

INTERPRETATION–

[7110.65, 4–2–8, IFR–VFR and VFR–IFR Flights \(11–03–2014\)](#)

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:

INTERPRETATION–

[*7110.65, 4-3-2 Departure Procedures \(5-24-2011\)*](#)

(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–

1. 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.

2. When a departure clearance includes a SID, concurrent use of a diverse vector area (DVA) is not permitted.

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 ODP has been published for a location and pilot compliance is necessary to ensure separation, include the procedure as part of the ATC clearance. Additionally, when an ODP is included in the clearance and the Visual Climb over Airport (VCOA) is requested by the pilot or assigned by ATC when it is the only procedure published in the ODP, include an instruction to remain within the published visibility of the VCOA.

EXAMPLE–

“Depart via the (airport name)(runway number) obstacle departure procedure. Remain within (number of miles) miles of the (airport name) during visual climb” if applicable. Or,

“Depart via the (graphic ODP name) obstacle departure procedure. Remain within (number of miles) miles of the (airport name) during visual climb” if applicable.

NOTE–

1. Pilots will advise ATC of their intent to use the VCOA option when requesting their IFR clearance.

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

3. 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. 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.

4. SIDs:

(a) Assign a SID (including transition if necessary). Assign an ADR/ADAR, when applicable or the route filed by the pilot, 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–

P/CG, 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, Para 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 nine 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, Para 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 paragraph 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.

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

EXAMPLE–

“United Four Seventeen, cross Lakeview V–O–R at and maintain six thousand.”

NOTE–

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

EXAMPLE–

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

NOTE–

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

NOTE–

- 1.** A descent clearance which specifies a crossing altitude authorizes descent at pilot’s discretion for that portion of the flight to which the crossing altitude restriction applies.
- 2.** Any other time that authorization to descend at pilot’s discretion is intended, it must be specifically stated by the controller.
- 3.** The pilot may need to know of any future restrictions that might affect the descent, including those that may be issued in another sector, in order to properly plan a descent at pilot’s discretion.
- 4.** Controllers need to be aware that the descent rates in the AIM are only suggested and aircraft will not always descend at those rates.

REFERENCE–

P/CG Term– Pilot’s Discretion.

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

PHRASEOLOGY–

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

EXAMPLE–

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

NOTE–

- 1.** The pilot is expected to commence descent upon receipt of the clearance and to descend as prescribed in the AIM, paragraph 4–4–10, Adherence to Clearance, until FL 280. At that point, the pilot is authorized to continue descent to FL 240 within context of the term “at pilot’s discretion” as described in the AIM.
- 2.** Controllers need to be aware that the descent rates are only suggested and aircraft will not always descend at those rates.

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

EXAMPLE–

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

NOTE–

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

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

PHRASEOLOGY–

MAINTAIN BLOCK (altitude) THROUGH (altitude).

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

1. When established on the SID/STAR.
2. When navigating a published route inbound to the STAR.
3. When cleared direct to a waypoint/fix without a published altitude, assign a crossing altitude.

PHRASEOLOGY–

DESCEND VIA (STAR name and number).

DESCEND VIA (STAR name and number and runway transition number)

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

CLIMB VIA (SID name and number).

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

EXAMPLE–

“Descend via the Eagul Five arrival.”

“Descend via the Wynde Eight Arrival, Runway 28 right transition.”

“Descend via the Lendy One Arrival, Runway 22 left.”

“Climb via the Dawgs Four Departure.”

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

NOTE–

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

Clearance to “descent via” authorizes pilots:

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

NOTE–

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

1. When used in the IFR departure clearance, in a PDC, DCL or when subsequently cleared after departure to a waypoint depicted on a SID, to join a procedure after departure or resume a procedure.
2. When vertical navigation is interrupted and an altitude is assigned to maintain which is not contained on the published procedure, to climb from that previously-assigned altitude at pilot’s discretion to the altitude depicted for the next waypoint. ATC must ensure obstacle clearance until the aircraft is established on the lateral and vertical path of the SID.
3. Once established on the depicted departure, to climb and to meet all published or assigned altitude and speed restrictions.

REFERENCE–

FAA Order JO 7110.65, Para 4–4–2, Route Structure Transitions.

FAA Order JO 7110.65, Para 4–5–6, Minimum En Route Altitudes.

FAA Order JO 7110.65, Para 5–5–9, Separation From Obstructions.

P/CG – Climb Via, Descend Via.

NOTE–

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

EXAMPLE–

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

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

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

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

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

REFERENCE–

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

P/CG – Top Altitude, Bottom Altitude.

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

INTERPRETATION–

[7110.65, 4–5–7, Altitude Information \(12–1–2015\)](#)

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

NOTE–

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

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

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

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

PHRASEOLOGY–

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

EXAMPLE–

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

NOTE–

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

PHRASEOLOGY–

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

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

EXAMPLE–

1. *“Climb via SID except cross Mkala at or above seven thousand.”*

NOTE–

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

EXAMPLE–

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

NOTE–

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

8. When an aircraft has been issued an interim altitude and after departure ATC can subsequently clear the aircraft to climb to the original top altitude published in a SID that contains published crossing restrictions,

instruct aircraft to “climb via SID.” When issuing a different altitude and compliance with published restrictions is still required, instruct aircraft to “climb via SID except maintain (altitude).”

PHRASEOLOGY–

CLIMB VIA SID.

CLIMB VIA SID EXCEPT MAINTAIN (altitude).

EXAMPLE–

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

NOTE–

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

EXAMPLE–

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

NOTE–

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

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

PHRASEOLOGY–

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

EXAMPLE–

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

NOTE–

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

REFERENCE–

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

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

PHRASEOLOGY–

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

EXAMPLE–

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

NOTE–

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

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

REFERENCE–

FAA Order JO 7110.65, Para 4–2–5, Route or Altitude Amendments.

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

AIM, Para 4–4–10 Adherence to Clearance.

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

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

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.

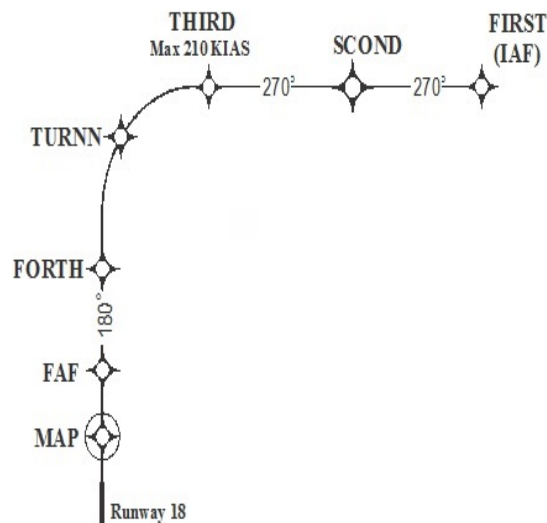
i. Clear RNAV-equipped aircraft conducting RNAV instrument approach procedures that contain radius to fix (RF) legs:

1. Via published transitions, or
2. In accordance with subparagraph h.
3. Do not clear aircraft direct to any waypoint beginning or within an RF leg.
4. Do not assign fix/waypoint crossing speeds in excess of charted speed restrictions.

NOTE—

1. RNAV approaches (containing RF legs) that commence at 10,000 feet or above require special procedures that will be site specific and specified in a facility directive.
2. An RF leg is defined as a curved segment indicating a constant radius circular path about a defined turn center that begins at a waypoint. RF legs may have maximum airspeeds charted for procedural containment that must be followed.
3. If an aircraft is vectored off the procedure, expect the aircraft to request a return to an IAF.

**FIG 4-8-5
Radius to Fix (RF) and Track to Fix (TF)**



NOTE—

1. The segment between *THIRD* and *FORTH* in FIG 4-8-5 is an RF leg.
2. The straight segments between waypoints in FIG 4-8-5 are TF legs.

j. Where a terminal arrival area (TAA) has been established to support RNAV approaches, use the procedures under subparagraph b above. (See FIG 4-8-6.)

NOTE—

1. Aircraft that are within the lateral boundary of a TAA, and at or above the TAA minimum altitude, are established on the approach and may be issued an approach clearance without an altitude restriction.
2. The TAA minimum altitude may be higher than the MVA/MIA. If an aircraft is below the TAA minimum altitude, it must either be assigned an altitude to maintain until established on a segment of a published route or instrument approach procedure, or climbed to the TAA altitude.

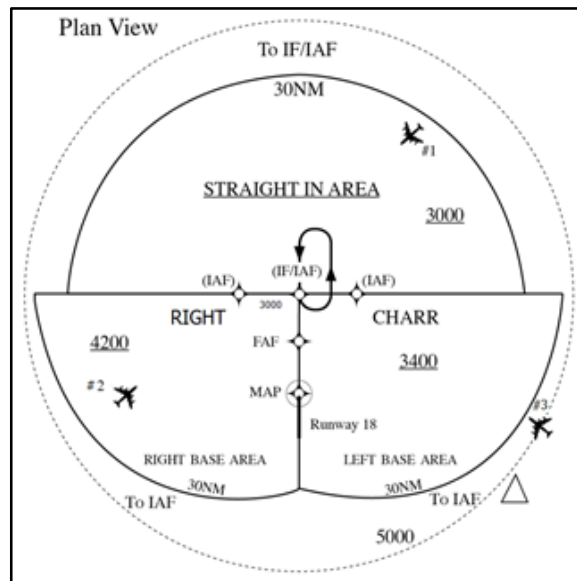
EXAMPLE—

Aircraft 1: The aircraft is at or above the minimum TAA altitude and within the lateral boundary of the TAA. “Cleared R-NAV Runway One Eight Approach.”

Aircraft 2: The MVA is 3000 feet and the aircraft is level at 4000 feet. The TAA minimum altitude is 4200 feet. The aircraft must be assigned an altitude to maintain until established on a segment of the approach. “Cross RIGHT at or above three thousand, cleared R-NAV Runway One Eight Approach.”

Aircraft 3: The aircraft is inbound to the CHARR IAF on an unpublished direct route at 7,000 feet. The minimum IFR altitude for IFR operations (14 CFR Section 91.177) along this flight path to the IAF is 5,000 feet. “Cleared direct CHARR, maintain at or above five thousand until entering the TAA, cleared RNAV Runway One-Eight Approach.”

FIG 4-8-6
Basic “T” and TAA Design



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

INTERPRETATION—

[7110.65, 4-8-1, Approach Clearance \(ZAB\) \(7-17-2015\)](#)

[7110.65, 4-8-1, Approach Clearance \(ZKC\) \(7-17-2015\)](#)

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

REFERENCE—

FAA Order JO 7110.65, Para 2-1-10, NAVAID Malfunctions.

FAA Order JO 7110.65, Para 4-7-12, Airport Conditions.

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

NOTE–

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

4-8-2. 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 90–66, Non-Towered Airport Flight Operations.

INTERPRETATION–

[7110.65, 4–8–8, Communication Release and Applicability to Special VFR Aircraft \(9–24–2014\)](#)

4–8–9. MISSED APPROACH

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

NOTE–

1. 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, Para 8–6–6

FAA Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), Para 2–8–1 and Chapter 16.

AIM, Para 5–5–5, Missed Approach.

4–8–10. APPROACH INFORMATION

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

- a. Initial approach altitude.
- b. Direction and distance from the holding fix within which procedure turn is to be completed.
- c. Altitude at which the procedure turn is to be made.
- d. Final approach course and altitude.
- e. Missed approach procedures if considered necessary.

PHRASEOLOGY–

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

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

REFERENCE–

AIM, Para 5–1–17, Cold Temperature Operations.

AIM, Para 5–5–4, Instrument Approach.

AIM, Para 5–5–5, Missed Approach.

4–8–11. PRACTICE 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 paragraph 4–3–2, *Departure Clearances*). Climb-out instructions must include a specific heading or a route of flight and altitude, except when the aircraft will maintain VFR and contact the tower.

EXAMPLE–

“After completing low approach, climb and maintain six thousand. Turn right, heading three six zero.”

“Maintain VFR, contact tower.”

(Issue other instructions as appropriate.)

NOTE–

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

Chapter 5. Radar

Section 1. General

5-1-1. PRESENTATION AND EQUIPMENT PERFORMANCE

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

NOTE-

The provision of radar services is not limited to the distance and altitude parameters obtained during the commissioning flight check. FAA Order 8200.1, United States Standard Flight Inspection Manual, Chapter 14, Surveillance, describes the surveillance flight inspection procedures.

b. Notify the OS/CIC of any radar malfunctions or unexpected outages. Advise adjacent facilities when appropriate.

REFERENCE-

FAA Order JO 7110.65, Para 2-1-9, Reporting Essential Flight Information.

FAA Order JO 7210.3, Chapter 3, Chapter 7, Chapter 10 Section 5, and Chapter 12 Section 6.

5-1-2. ATC SURVEILLANCE SOURCE USE

Use approved ATC surveillance sources. **TERMINAL**. When operating in FUSION mode, the provisions of 5-1-2a are not applicable, unless required by facility directive.

REFERENCE-

FAA Order JO 7110.65, Para 5-2-13, Inoperative or Malfunctioning Interrogator.

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

1. In Class A airspace.

REFERENCE-

FAA Order JO 7110.65, Para 5-2-14, Failed Transponder or ADS-B Out Transmitter.

14 CFR Section 91.135, Operations in Class A Airspace.

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

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

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

or

PHRASEOLOGY-

PRIMARY RADAR UNAVAILABLE (describe location). **RADAR SERVICES AVAILABLE ON TRANSPONDER OR ADS-B EQUIPPED AIRCRAFT ONLY.**

NOTE-

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

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

(c) A secondary radar system is the only source of radar data for the area of service. **TERMINAL**. Advise pilots when these conditions exist.

NOTE-

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

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

c. Targets derived from ADS-B and WAM may be used for the provision of all terminal services when operating in STARS Fusion, STARS FMA, and STARS Multi-Sensor Mode, including those associated with any published instrument procedure annotated "radar required."

NOTE–

Targets derived from WAM cannot be used to provide 3 NM separation in the EAS. 3 NM targets are not derived from WAM within the EAS.

REFERENCE–

FAA Order JO 7110.65, Para 4–1–2, Exceptions.

FAA Order JO 7110.65, Para 4–4–2, Route Structure Transitions.

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.

FAA Order JO 7110.65, Chapter 6, Nonradar.

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

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

5–1–3. ELECTRONIC ATTACK (EA) ACTIVITY

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

REFERENCE–

FAA Order JO 7610.4, Chapter 2, Section 3, Electronic Attack (EA) Mission Coordination.

NOTE–

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

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

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

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

- c. When previously suspended activity will no longer interfere:

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

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

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

PHRASEOLOGY–

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

To stop EA activity:

STOP STREAM/BURST IN AREA (area name) (degree and distance from facility),

or

STOP BUZZER ON (frequency band or channel).

To resume EA activity:

RESUME STREAM/BURST,

or

RESUME BUZZER ON (frequency band or channel).

PHRASEOLOGY–
SQUAWK STANDBY,

or

SQUAWK NORMAL.

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

5–2–11. CODE MONITOR

a. Continuously monitor the codes assigned to aircraft operating within your area of responsibility. Additionally, monitor Code 1200, Code 1202, Code 1203, Code 1255, and Code 1277 unless your area of responsibility includes only Class A airspace. During periods when excessive VFR target presentations derogate the separation of IFR traffic, monitoring of the aforementioned codes may be temporarily discontinued.

b. When your area of responsibility contains or is immediately adjacent to a restricted area, warning area, VR route, or other category where Code 4000 is appropriate, monitor Code 4000 and any other code used in lieu of 4000.

REFERENCE–
FAA Order JO 7210.3, Para 3–6–3, Monitoring of Mode 3/A Radar Beacon Codes.

5–2–12. FAILURE TO DISPLAY ASSIGNED BEACON CODE OR INOPERATIVE/MALFUNCTIONING TRANSPONDER

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

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

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

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

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

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

5–2–13. INOPERATIVE OR MALFUNCTIONING INTERROGATOR

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

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

REFERENCE–
FAA Order JO 7110.65, Para 5–1–2, ATC Surveillance Source Use.
FAA Order JO 7110.65, Para 5–3–3, Beacon/ADS–B Identification Methods.

5–2–14. FAILED TRANSPONDER OR ADS–B OUT TRANSMITTER

Disapprove a request or withdraw a previously issued approval to operate with a failed transponder or ADS–B Out solely on the basis of traffic conditions or other operational factors.

REFERENCE–
FAA Order JO 7110.65, Para 5–1–2, ATC Surveillance Source Use.
FAA Order JO 7110.65, Para 5–3–3, Beacon/ADS–B Identification Methods.

5–2–15. VALIDATION OF MODE C ALTITUDE READOUT

a. Ensure that Mode C altitude readouts are valid after:

1. Initial track start.
2. Track start from coast/frozen status.
3. During and after an unreliable Mode C readout.
4. Accepting an interfacility handoff, except:

(a) CTRD-equipped tower cabs are not required to validate Mode C altitude readouts after accepting interfacility handoffs from TRACONs according to the procedures in paragraph 5–4–3, Methods, subparagraph a4.

(b) ERAM facilities are not required to validate Mode C altitude readouts after accepting interfacility handoffs from other ERAM facilities, except:

(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.

NOTE–

Consider a Mode C readout unreliable when any condition exists that indicates the Mode C may be in error; not just those that display an indicator in the Data Block.

b. 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 5–2–21, Altitude Filters.

FAA Order JO 7110.65, Para 5–13–5, Selected Altitude Limits.

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.

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

d. Whenever you observe an aircraft below FL 180 with an invalid Mode C readout:

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.

- e. Whenever you observe an aircraft at or above FL 180 with an invalid Mode C readout, 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 operations supervisor-in-charge of the aircraft call sign.

PHRASEOLOGY–

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

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

5-2-16. 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/ADS-B Identification Methods.

5-2-17. 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/ADS-B Identification Methods.

5-2-18. 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 5-2-15, Validation of Mode C Altitude Readout.

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

P/CG Term – Automatic Altitude Report.

5-2-19. 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/ADS–B Identification Methods.

5–2–20. BEACON TERMINATION

Inform the pilot when you want their aircraft's transponder and ADS–B Out turned off.

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/ADS–B Identification Methods.

5–2–21. 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 5-2-15, Validation of Mode C Altitude Readout, subparagraph b2 may be applied. Air traffic managers may authorize temporary suspension of this requirement when target clutter is excessive.

5-2-22. INOPERATIVE OR MALFUNCTIONING ADS-B TRANSMITTER

a. When an aircraft's ADS-B transmitter appears to be inoperative or malfunctioning, notify the OS/CIC of the aircraft call sign, location, and time of the occurrence (UTC). Except for DoD aircraft or those provided for in paragraph 5-2-24, inform the pilot.

PHRASEOLOGY-

YOUR ADS-B TRANSMITTER APPEARS TO BE INOPERATIVE / MALFUNCTIONING.

NOTE-

FAA Flight Standards Service, Safety Standards Division (AFS) is responsible for working with aircraft operators to correct ADS-B malfunctions. The intent of this paragraph is to capture ADS-B anomalies observed by ATC, such as errors in the data (other than Call Sign Mis-Match events, which are detected and reported to AFS automatically) or instances when civil ADS-B transmissions would normally be expected but are not received (e.g., ADS-B transmissions were observed on a previous flight leg).

b. If a malfunctioning ADS-B transmitter is jeopardizing the safe execution of air traffic control functions, instruct the aircraft to stop ADS-B transmissions, and notify the OS/CIC.

PHRASEOLOGY-

STOP ADS-B TRANSMISSIONS, AND IF ABLE, SQUAWK THREE/ALFA (code).

NOTE-

Not all aircraft have a capability to disengage the ADS-B transmitter independently from the beacon code squawk.

REFERENCE-

FAA Order JO 7110.65, Para 5-2-23, ADS-B Alerts.

FAA Order JO 7210.3, Para 2-1-33, Reporting Inoperative or Malfunctioning ADS-B Transmitters.

FAA Order JO 7210.3, Para 5-4-9, ADS-B Out OFF Operations.

FAA Order JO 7110.67, Para 19, ATC Security Procedures for ADS-B Out OFF Operations.

5-2-23. ADS-B ALERTS

a. Call Sign Mis-Match (CSMM). A CSMM alert will occur when the transmitted ADS-B Flight Identification (FLT ID) does not match the flight plan aircraft identification. Inform the aircraft of the CSMM.

PHRASEOLOGY-

YOUR ADS-B FLIGHT ID DOES NOT MATCH YOUR FLIGHT PLAN AIRCRAFT IDENTIFICATION.

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.

NOTE-

Duplicate ICAO Address Alerts appear as "DA" and are associated with the Data Block (DB) on STARS 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" at the AT Specialist Workstation on ERAM systems.

c. If a CSMM or Duplicate ICAO address is jeopardizing the safe execution of air traffic control functions, instruct the aircraft to stop ADS-B transmissions, and notify the OS/CIC.

PHRASEOLOGY-

STOP ADS-B TRANSMISSIONS, AND IF ABLE, SQUAWK THREE/ALFA (code).

NOTE-

Not all aircraft are capable of disengaging the ADS-B transmitter independently from the transponder.

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 5-2-15, Validation of Mode C Altitude 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

Unless otherwise coordinated or specified in an LOA or facility directive, the transferring controller must:

a. Complete a handoff prior to an aircraft entering the airspace delegated to the receiving controller.

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.

c. Advise the receiving controller of pertinent information not contained in the data block or flight progress strip, including:

- 1.** Assigned heading.
- 2.** Airspeed restrictions.
- 3.** Altitude information issued.
- 4.** Observed track or deviation from the last route clearance.
- 5.** The beacon code, if different from that normally used or previously coordinated.
- 6.** Any other pertinent information.

d. Initiate verbal coordination to verify the position of primary or nondiscrete targets, except for intrafacility automated handoffs in STARS, ERAM, or MEARTS in Fused Display Mode.

e. Initiate verbal coordination before transferring control of a track when “CST,” “FAIL,” “NONE,” “IF,” “NT,” or “TRK” is displayed in the data block.

f. Advise the receiving controller if radar monitoring is required.

REFERENCE-

FAA Order JO 7110.65, Para 4-1-2, Exceptions.

FAA Order JO 7110.65, Para 4-4-2, Route Structure Transitions.

g. Consider the target being transferred as identified on the receiving controller’s display when the receiving controller acknowledges receipt verbally or accepts the automated handoff.

h. Prior to transferring communications:

1. Resolve any potential violations of adjacent airspace and potential conflicts with other aircraft in your area of jurisdiction.

2. Coordinate with any controller whose area of jurisdiction the aircraft will transit prior to entering the receiving controller’s area of jurisdiction.

3. Forward to the receiving controller any restrictions issued to ensure separation.

4. Comply with restrictions issued by the receiving controller.

i. Comply with the provisions of paragraph 2–1–17, Radio Communications. To the extent possible, transfer communications when the handoff has been accepted.

NOTE–

Before the STARS “modify/quick look” function is used to effect a handoff, a facility directive that specifies communication transfer points is required.

j. After transferring communications, continue to comply with the requirements of subparagraphs h1 and h2.

k. Before releasing control of the aircraft, issue restrictions to the receiving controller that are necessary to maintain separation from other aircraft within your area of jurisdiction.

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.

FAA Order JO 7110.65, Para 5–4–8, Automated Information Transfer (AIT).

FAA Order JO 7210.3, Para 4–3–10, Automated Information Transfer (AIT).

5–4–6. RECEIVING CONTROLLER HANDOFF

The receiving controller must:

a. Ensure that the target position corresponds with the position given by the transferring controller or that there is an appropriate association between an automated data block and the target being transferred before accepting a handoff.

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 5–4–5, Transferring Controller Handoff.

b. Issue restrictions that are needed for the aircraft to enter your sector safely before accepting the handoff.

c. Comply with restrictions issued by the transferring controller unless otherwise coordinated.

d. After accepting a handoff from another facility, confirm the identification of a primary target by advising the aircraft of its position, and of a nondiscrete beacon target by observing a code change, an “ident” reply, or a “standby” squawk unless one of these was used during handoff. These provisions do not apply at those towers and GCAs that have been delegated the responsibility for providing radar separation within designated areas by the overlying approach control facility and the aircraft identification is assured by sequencing or positioning prior to the handoff.

REFERENCE–

FAA Order JO 7110.65, Para 5–9–5, Approach Separation Responsibility.

e. Consider a beacon target’s identity to be confirmed when:

1. The data block associated with the target being handed off indicates the computer assigned discrete beacon code is being received; or

2. You observe the deletion of a discrete code that was displayed in the data block; or

NOTE–

When the beacon code received from the aircraft does not match the computer assigned beacon code, the code received (ERAM, MEARTS) or the site–adapted code (received, computer–assigned, or both for STARS) will be displayed in the data block. When the aircraft changes to the computer assigned code, the code is automatically removed from the data block. In this instance, the observance of code removal from the data block satisfies confirmation requirements.

3. You observe the numeric display of a discrete code that an aircraft has been instructed to squawk or reports squawking.

f. Take the identified action prior to accepting control of a track when the following indicators are displayed in the data block:

1. “AMB” or “AM”: advise the other facility that a disparity exists between the position declared by their computer and the position declared by your STARS/MEARTS system.
 2. “NAT” or “NT”: advise the other facility if a disparity exists between the position declared by their computer and the actual target position.
 3. “DATA,” “CST,” “NONE,” or “OLD”: initiate verbal coordination.
- g. ERAM: Notify the OS/CIC when a MISM is displayed in the data block.
- h. Advise the transferring controller as soon as possible if you will delay the climb or descent of the aircraft through the vertical limits of that controller’s area of jurisdiction, unless otherwise specified in an LOA or a facility directive.

5-4-7. POINT OUT

- a. The transferring controller must:

1. Obtain approval before permitting an aircraft to enter the receiving controller’s delegated airspace.

(a) EN ROUTE: Automated approval may be utilized in lieu of verbal approval. If the receiving controller takes no action, revert to verbal procedures.

NOTE-

1. Use fourth line data for aircraft not on their flight plan route.
2. Where specified in a letter of agreement, some facilities may restrict interfacility automated point outs.

REFERENCE-

FAA Order JO 7110.65, Para 2-10-1, En Route Or Oceanic Sector Team Responsibilities.

FAA Order JO 7110.65, Para 5-4-3, Methods.

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

FAA Order JO 7110.65, Para 5-13-3, Computer Entry of Flight Plan Information.

(b) TERMINAL: Automated point out approval may be utilized in lieu of verbal provided the procedures are contained in a facility directive/LOA.

2. Obtain the receiving controller’s approval before making any changes to an aircraft’s flight path, altitude, speed, or data block information after the point out has been approved.

3. Comply with restrictions issued by the receiving controller unless otherwise coordinated.

4. Be responsible for subsequent radar handoffs and communications transfer, including flight data revisions and coordination, unless otherwise agreed to by the receiving controller or as specified in a LOA.

- b. The receiving controller must:

1. Ensure that the target position corresponds with the position given by the transferring controller or that there is an association between a computer data block and the target being transferred prior to approving a point out.

2. Be responsible for separation between point out aircraft and other aircraft for which he/she has separation responsibility.

3. Issue restrictions necessary to provide separation from other aircraft within his/her area of jurisdiction.

5-4-8. AUTOMATED INFORMATION TRANSFER (AIT)

Transfer radar identification, altitude control, and/or en route fourth line control information, without verbal coordination under the following conditions:

- a. During radar handoff; and
- b. Via information displayed in full data blocks; and
- c. When following procedures specified in your facility AIT directive and/or LOA.

NOTE–

Information transferred using AIT procedures may be bi-directional, and may involve more than two sectors. Complete coordination, awareness of traffic flow, and understanding of each position's responsibilities concerning AIT procedures cannot be overemphasized.

REFERENCE–

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

FAA Order JO 7210.3, Para 4–3–10, Automated Information Transfer (AIT).

5–4–9. PREARRANGED COORDINATION

Prearranged coordination allowing aircraft under your control to enter another controller's area of jurisdiction may only be approved provided procedures are established and published in a facility directive in accordance with FAA Order JO 7210.3, paragraph 3–6–6, Prearranged Coordination.

NOTE–

Under no circumstances may one controller permit an aircraft to enter another's airspace without proper coordination. Coordination can be accomplished by several means; i.e., radar handoff, automated information transfer, verbal, point-out, and by prearranged coordination procedures identified in a facility directive that clearly describe the correct application. Airspace boundaries should not be permitted to become barriers to the efficient movement of traffic. In addition, complete coordination, awareness of traffic flow, and understanding of each position's responsibility concerning penetration of another's airspace cannot be overemphasized.

REFERENCE–

FAA Order JO 7110.65, Para 2–1–14, Coordinate Use of Airspace.

FAA Order JO 7110.65, Para 5–4–3, Methods.

FAA Order JO 7110.65, Para 5–4–8, Automated Information Transfer (AIT).

FAA Order JO 7210.3, Para 3–6–6, Prearranged Coordination.

5–4–10. EN ROUTE FOURTH LINE DATA BLOCK USAGE

a. The fourth line of the data block must be displayed. When used for forwarding control information, only the specified messages listed in this section may be used. Any additional control information must be forwarded via other communications methods. Free text may be used by individual sector teams for recording information the team deems appropriate for managing the sector, but must be removed prior to initiation of identification transfer.

REFERENCE–

FAA Order JO 7110.65, Para 5–4–5, Transferring Controller Handoff, subpara b.

FAA Order JO 7110.65, Para 5–4–8, Automated Information Transfer (AIT).

b. The en route fourth line data block area must be used for coordination purposes only in association with radar identified aircraft.

c. When automated information transfer (AIT) procedures are applied, en route fourth line usage for transfer of control information must be specifically defined within facility AIT directive.

REFERENCE–

FAA Order JO 7110.65, Para 5–4–8, Automated Information Transfer (AIT).

FAA Order JO 7210.3, Para 4–3–10, Automated Information Transfer (AIT).

d. Coordination format for assigned headings must use the designation character "H" preceding a three-digit number.

EXAMPLE–

H080, H270

e. Aircraft assigned a heading until receiving a fix or joining a published route must be designated with assigned heading format followed by the fix or route.

NOTE–

1. The notation "PH" may be used to denote present heading.

2. The character "H" may be omitted as a prefix to the heading assignment only if necessary due to character field limitations, and it does not impede understanding.

Section 5. Radar Separation

5-5-1. APPLICATION

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

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

REFERENCE–

FAA Order JO 7110.65, Para 2-3-8, Aircraft Equipment Suffixes.

FAA Order JO 7110.65, TBL 2-3-10, Aircraft Equipment Suffixes.

FAA Order JO 7110.65, Para 4-4-1, Route Use.

AIM, Para 5-1-8, Area Navigation (RNAV).

AIM, Para 5-3-4, Area Navigation (RNAV) Routes.

P/CG Term – Global Navigation Satellite System (GNSS)[ICAO].

P/CG Term – Global Positioning Satellite/ Wide Area Augmentation Minimum En Route IFR Altitude (GPS/WAAS MEA).

P/CG Term – Parallel Offset Route.

b. Radar separation may be applied between:

1. Radar identified aircraft.

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

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

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

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

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

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

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

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

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

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

REFERENCE–

FAA Order JO 7110.65, Para 4-1-2, Exceptions.

FAA Order JO 7110.65, Para 4-4-1, Route Use.

FAA Order JO 7110.65, Para 5-3-1, Application.

FAA Order JO 7110.65, Para 5-5-8, Additional Separation for Formation Flights.

FAA Order JO 7110.65, Para 5-9-5, Approach Separation Responsibility.

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

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

REFERENCE-

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

FAA Order JO 7110.65, Para 5-1-1, Presentation and Equipment Performance.

FAA Order JO 7110.65, Para 5-3-1, Application.

FAA Order JO 7110.65, Para 8-1-8, Use of Control Estimates.

FAA Order JO 7110.65, Para 8-5-5, Radar Separation.

5-5-2. TARGET SEPARATION

Apply radar separation:

- a. Between the centers of primary radar targets; however, do not allow a primary target to touch another primary target or a beacon control slash.
- b. Between the ends of beacon control slashes.
- c. Between the end of a beacon control slash and the center of a primary target.
- d. All-digital displays. Between the centers of digital targets; do not allow digital targets to touch.

REFERENCE-

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

5-5-3. TARGET RESOLUTION

- a. A process to ensure that correlated radar targets or digitized targets do not touch.
- b. Mandatory traffic advisories and safety alerts must be issued when this procedure is used.

NOTE-

This procedure must not be provided utilizing mosaic radar systems.

- c. Target resolution must be applied as follows:
 - 1. Between the edges of two primary targets or the edges of primary digitized targets.
 - 2. Between the end of the beacon control slash and the edge of a primary target or primary digitized target.
 - 3. Between the ends of two beacon control slashes.

5-5-4. MINIMA

Separate aircraft by the following minima:

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

NOTE-

1. *Includes single sensor long range radar mode.*

2. *ADS-B and WAM are not selectable sources when in Single Sensor Mode.*

- 1. When less than 40 miles from the antenna- *3 miles.*
- 2. When 40 miles or more from the antenna- *5 miles.*

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

NOTE-

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

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

NOTE–

TRK appears in the data block whenever the aircraft is being tracked by a radar site other than the radar currently selected. Current equipment limitations preclude a target from being displayed in the single sensor mode; however, a position symbol and data block, including altitude information, will still be displayed. Therefore, low altitude alerts must be provided in accordance with paragraph 2–1–6, Safety Alert.

b. TERMINAL. FUSION:

1. Fusion target symbol – 3 miles.
2. When displaying ISR in the data block- 5 miles.

NOTE–

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

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

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

c. STARS Multi-Sensor Mode – 5 miles.**NOTE–**

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

d. ERAM:

1. Below FL 600- 5 miles.
2. At or above FL 600- 10 miles.
3. Up to and including FL 230 where all the following conditions are met – 3 miles:
 - (a) Within the 3 NM separation area, and:
 - (1) Within 40 NM of the preferred radar; or
 - (2) Within 60 NM of the preferred radar when using an MSSR; or
 - (3) When operating in track-based display mode.
 - (b) The preferred sensor and/or ADS-B is providing reliable targets.
 - (c) Facility directives specifically define the 3 NM separation area.
 - (d) The 3 NM separation area is displayable on the video map.
 - (e) Involved aircraft are displayed using the 3 NM target symbol.

NOTE–

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

4. When transitioning from terminal to en route control, 3 miles increasing to 5 miles or greater, provided:
 - (a) The aircraft are on diverging routes/courses, and/or
 - (b) The leading aircraft is and will remain faster than the following aircraft; and
 - (c) Separation constantly increasing and the first center controller will establish 5 NM or other appropriate form of separation prior to the aircraft departing the first center sector; and

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

REFERENCE–

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

e. MEARTS Mosaic Mode:

1. Below FL 600- 5 miles.
2. At or above FL 600- 10 miles.
3. For areas meeting all of the following conditions – 3 miles:
 - (a) Radar site adaptation is set to single sensor mode.

NOTE–

1. Single Sensor Mode displays information from the radar input of a single site.
2. Procedures to convert MEARTS Mosaic Mode to MEARTS Single Sensor Mode at each PVD/MDM will be established by facility directive.

(b) Significant operational advantages can be obtained.

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

(d) Up to and including FL230.

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

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

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

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

(c) Significant operational advantages can be obtained.

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

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

WAKE TURBULENCE APPLICATION

f. Separate aircraft operating directly behind or following an aircraft conducting an instrument approach by the minima specified and in accordance with the following:

NOTE–

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

1. When operating within 2,500 feet of the flight path of the leading aircraft over the surface of the earth and less than 1,000 feet below:

(a) **TERMINAL.** Behind super:

- (1) Heavy - 6 miles.
- (2) Large - 7 miles.
- (3) Small - 8 miles.

(b) *EN ROUTE*. Behind super - 5 miles, unless the super is operating at or below FL240 and below 250 knots, then:

(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

g. In addition to subparagraph f, separate an aircraft landing behind another aircraft on the same runway, or one making a touch-and-go, stop-and-go, or low approach by ensuring the following minima will exist at the time the preceding aircraft is over the landing threshold:

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.

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

INTERPRETATION-

[7110.65, 5-5-4, Minima, Wake Turbulence Minima Application \(2-23-2023\)](#)

[7110.65, 5-5-4h, Minima \(2-21-2023\)](#)

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

1. The leading aircraft's weight class is the same or less than the trailing aircraft;

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 10–4–10, Reduced Separation on Final.

5–5–5. VERTICAL APPLICATION

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

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

REFERENCE–

FAA Order JO 7110.65, Para 4–5–1, Vertical Separation Minima.
 FAA Order JO 7110.65, Para 5–2–15, Validation of Mode C Altitude Readout.
 FAA Order JO 7110.65, Para 7–7–3, Separation.
 FAA Order JO 7110.65, Para 7–8–3, Separation.
 FAA Order JO 7110.65, Para 7–9–4, Separation.

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

NOTE–

1. Consider known aircraft performance characteristics, pilot furnished and/or Mode C detected information which indicate that climb/descent will not be consistent with the rates recommended in the AIM.
2. It is possible that the separation minima described in paragraph 4–5–1, Vertical Separation Minima, paragraph 7–7–3, Separation, paragraph 7–8–3, Separation, or paragraph 7–9–4, Separation, might not always be maintained using subparagraph b. However, correct application of this procedure will ensure that aircraft are safely separated because the first aircraft must have already vacated the altitude prior to the assignment of that altitude to the second aircraft.

REFERENCE–

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

5–5–6. EXCEPTIONS

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

REFERENCE–

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

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

1. Severe turbulence is reported.
2. Aircraft are conducting military aerial refueling.

REFERENCE–

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

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

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

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. A speed restriction published as part of a SID/STAR is canceled when an aircraft is vectored off, or a deviation from the SID/STAR is approved. If necessary, assign a speed in conjunction with the vector or approval to deviate.

NOTE–

The last published speed on a STAR will be maintained by the aircraft until ATC deletes it, assigns a new speed, issues a vector, assigns a direct route or issues an approach clearance.

f. When issuing speed adjustments to aircraft cleared along a route or procedure that has published speed restrictions, if feasible, advise the pilot where you intend on allowing the aircraft to resume the published speed.

NOTE–

If it is anticipated that an aircraft will be allowed to resume the published speeds on a procedure, advising the pilot where that may occur avoids flight crews from unnecessarily deleting speeds from the Flight Management System.

g. 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 5–6–1, Application.

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 in single-digit form or by a specified number of knots in group form.

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.

(if required) EXCEPT (alternate instructions).

DELETE SPEED RESTRICTIONS.

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

NOTE–

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

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

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

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.

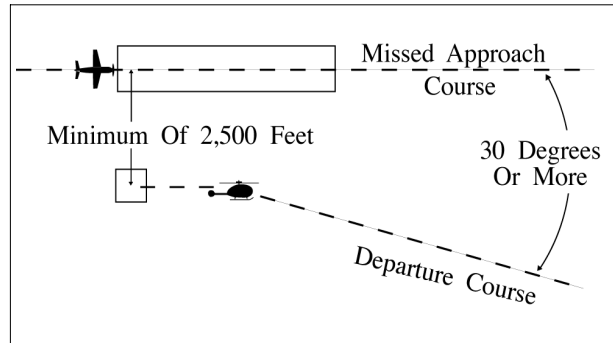
PHRASEOLOGY–
DELETE SPEED RESTRICTIONS

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.

INTERPRETATION–
[7110.65, 5–7–4, Termination of Speed Adjustment \(10–21–2015\)](#)

FIG 5-8-11
Parallel Thresholds are Even



b. When parallel runway thresholds are staggered and:

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

FIG 5-8-12
Parallel Thresholds are Staggered

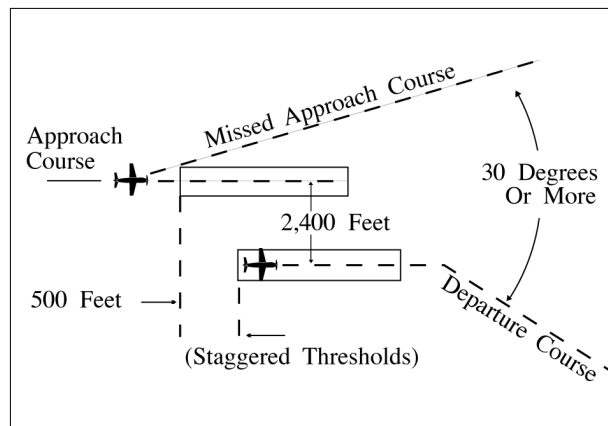
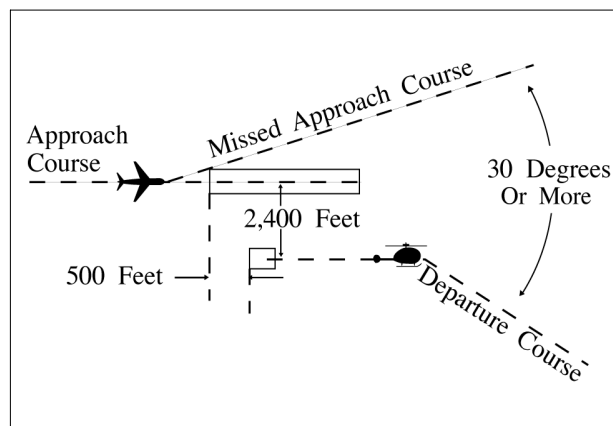


FIG 5-8-13
Parallel Thresholds are Staggered



NOTE—

In the event of a missed approach by an aircraft requiring wake turbulence separation behind it, apply the procedures in

paragraph 3-9-6, *Same Runway Separation* and/or paragraph 3-9-8, *Intersecting Runway/Intersecting Flight Path Operations* to ensure that the larger aircraft does not overtake or cross in front of an aircraft departing from the adjacent parallel runway.

REFERENCE-

FAA Order JO 7110.65, Para 5-5-4, *Minima, Subpara f.*

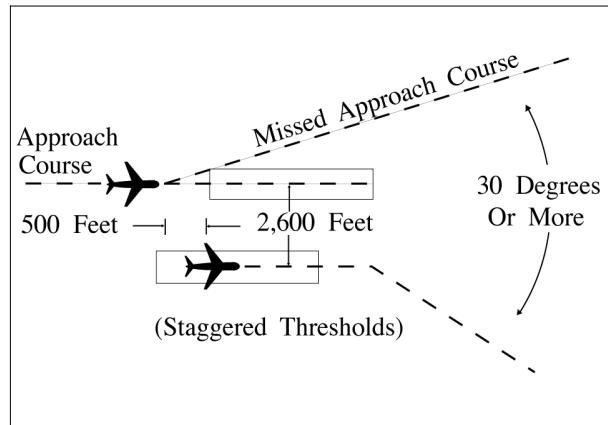
INTERPRETATION-

[7110.65, 5-8-5, *Departure and Arrivals on Parallel or Nonintersecting Diverging Runways \(6-14-2017\)*](#)

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

FIG 5-8-14

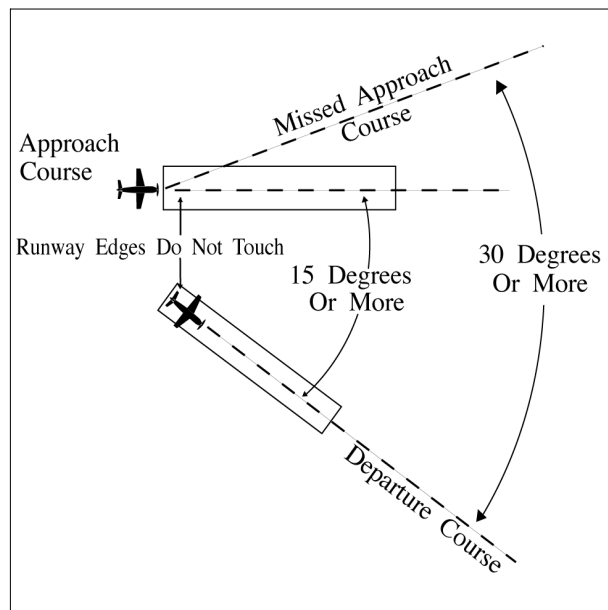
Parallel Thresholds are Staggered



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

FIG 5-8-15

Diverging Nonintersecting Runways



d. When the aircraft on takeoff is a helicopter, hold the helicopter until visual separation is possible or apply the separation criteria in subparagraphs a, b, or c.

REFERENCE-

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

FAA Order JO 7110.65, Para 5-9-6, Parallel Dependent Approaches.

FAA Order JO 7110.65, Para 6-7-2, Approach Sequence.

INTERPRETATION-

[7110.65, 5-9-5b, Approach Separation Responsibility and Chapter 6, Section 7, Timed Approaches \(6-19-2015\)](#)

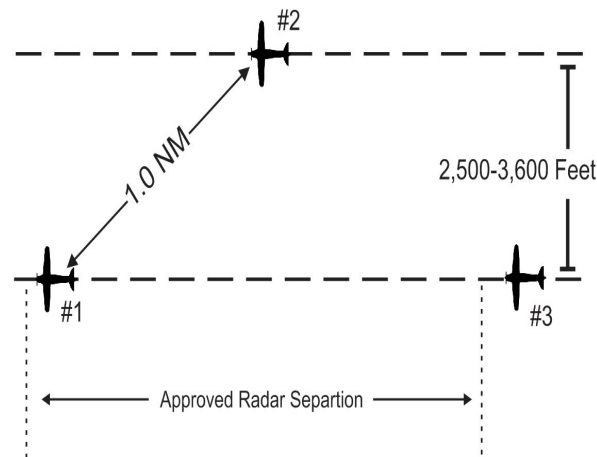
5-9-6. SIMULTANEOUS DEPENDENT APPROACHES

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

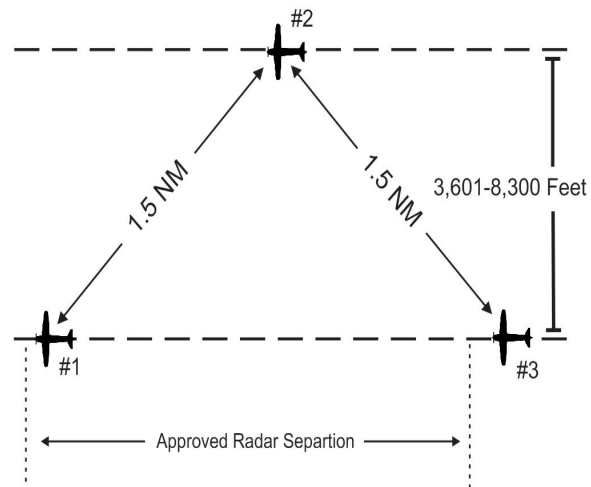


EXAMPLE-

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

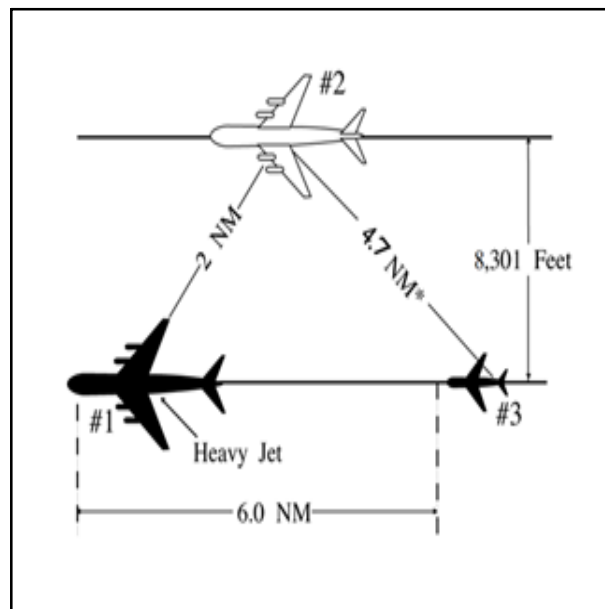


EXAMPLE-

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.

REFERENCE–

FAA Order JO 7210.3, Para 10-4-6, *Simultaneous Approaches (Dependent/Independent)*.

1. Straight-in landings will be made.
2. All appropriate communication, navigation, and surveillance systems are operating normally.
3. Inform aircraft that simultaneous independent approaches are in use, or when runway centerlines are less than 4,300 feet, PRM approaches are in use, prior to aircraft departing an outer fix. This information may be provided through the ATIS.

REFERENCE–

P/CG Term – *Precision Runway Monitor (PRM) System*.

4. Clear the aircraft to descend to the appropriate glideslope/glidepath intercept altitude soon enough to provide a period of level flight to dissipate excess speed. Provide at least 1 mile of straight flight prior to the final approach course intercept.

NOTE–

Not applicable to approaches with RF legs.

5. An NTZ is established an equal distance between extended runway final approach courses and must be depicted on the monitor display. The primary responsibility for navigation on the final approach course rests with the pilot. Control instructions and information are issued only to ensure separation between aircraft and to prevent aircraft from penetrating the NTZ.

NOTE–

Where RCLS is ≤ 3400 feet, the normal operating zone (NOZ) is constant at 700 feet; and for RCLS ≥ 3400 feet, the no transgression zone (NTZ) remains constant at 2000 feet.

6. Monitor all approaches regardless of weather. Monitor local control frequency to receive any aircraft transmission. Issue control instructions as necessary to ensure aircraft do not enter the NTZ.

NOTE–

1. Separate monitor controllers, each with transmit/receive and override capability on the local control frequency, must ensure aircraft do not penetrate the depicted NTZ. For PRM approaches, a transmit-only secondary “PRM frequency” is also used. Facility directives must define responsibility for providing the minimum applicable longitudinal separation between aircraft on the same final approach course.

2. The aircraft is considered the center of the primary radar return for that aircraft, or, if an FMA or other color final monitor aid is used, the center of the digitized target of that aircraft, for the purposes of ensuring an aircraft does not penetrate the NTZ. The provisions of paragraph 5-5-2, *Target Separation*, apply also.

7. Communications transfer to the tower controller’s frequency must be completed prior to losing 1,000 feet vertical or 3 miles radar separation between aircraft.

e. The following procedures must be used by the final monitor controllers:

1. For PRM approaches, provide position information to an aircraft that is left/right of the depicted final approach course centerline, and in your judgment is continuing on a track that may penetrate the NTZ.

PHRASEOLOGY–

(Aircraft call sign) I SHOW YOU (left/right) OF THE FINAL APPROACH COURSE.

2. Instruct the aircraft to return to the correct final approach course when aircraft are observed to overshoot the turn-on or to continue on a track which will penetrate the NTZ.

PHRASEOLOGY–

YOU HAVE CROSSED THE FINAL APPROACH COURSE. TURN (left/right) IMMEDIATELY AND RETURN TO THE FINAL APPROACH COURSE,

or

TURN (left/right) AND RETURN TO THE FINAL APPROACH COURSE.

3. Instruct aircraft on the adjacent final approach course to alter course to avoid the deviating aircraft when an aircraft is observed penetrating or in your judgment will penetrate the NTZ.

NOTE–

For PRM approaches, an instruction that may include a descent to avoid the deviating aircraft should only be used when there is no other reasonable option available to the controller. In such a case, the descent must not put the aircraft below the MVA.

PHRASEOLOGY–

TRAFFIC ALERT, (call sign), TURN (right/left) IMMEDIATELY HEADING (degrees), CLIMB/DESCEND AND MAINTAIN (altitude).

4. Terminate radar monitoring when one of the following occurs:

- (a)** Visual separation is applied.
- (b)** The aircraft reports the approach lights or runway in sight.
- (c)** The aircraft is 1 mile or less from the runway threshold, if procedurally required and contained in facility directives.

5. Do not inform the aircraft when radar monitoring is terminated.

f. Consideration should be given to known factors that may in any way affect the safety of the instrument approach phase of flight when simultaneous independent approaches, or PRM approaches, if applicable, are being conducted to parallel runways. Factors include, but are not limited to, wind direction/velocity, windshear alerts/reports, severe weather activity, etc. Closely monitor weather activity that could impact the final approach course. Weather conditions in the vicinity of the final approach course may dictate a change of approach in use.

REFERENCE–

FAA Order JO 7110.65, Para 5–1–9, Radar Service Termination.

FAA Order JO 7110.65, Para 5–9–2, Final Approach Course Interception.

5–9–8. SIMULTANEOUS INDEPENDENT CLOSE PARALLEL APPROACHES –PRECISION RUNWAY MONITOR (PRM) APPROACHES

TERMINAL

When conducting PRM approaches, apply all pertinent provisions of paragraph 5–9–7 and the following:

a. PRM approaches may only be conducted when charted in the approach title, and where instrument approach charts specifically authorize simultaneous approaches.

REFERENCE–

P/CG – Precision Runway Monitor (PRM) System.

P/CG – Simultaneous Close Parallel Approaches.

P/CG – PRM Approach.

b. PRM approaches must be assigned when conducting instrument approaches to dual and triple parallel runways with runway centerlines separated by less than 4,300 feet.

5–9–9. SIMULTANEOUS OFFSET INSTRUMENT APPROACHES (SOIA)

TERMINAL

a. Simultaneous offset instrument approaches (SOIA) may be conducted at FAA designated airports that have an authorization issued by the Director, Operational Policy and Implementation, AJT–2, in coordination with AFS with parallel runways that have centerlines separated by at least 750 feet and less than 3,000 feet with one final approach course offset by 2.5 to 3.0 degrees; and

1. Provide a minimum of 1,000 feet vertical or a minimum of 3 miles radar separation between aircraft during turn–on to final approaches.

NOTE–

Communications transfer to the tower controller's frequency must be completed prior to losing vertical separation between aircraft.

3. For runways less than 2,500 feet apart, whenever the ceiling is less than 500 feet above the MVA, wake vortex spacing between aircraft on adjacent final approach courses, as described in paragraph 5-5-4, Minima, must be applied unless acceptable mitigating techniques and operational procedures have been documented and verified by an AFS safety assessment and authorized by the Director, Operational Policy and Implementation, AJT-2. The wake turbulence mitigation techniques employed will be based on each airport's specific runway geometry and meteorological conditions and implemented through local facility directives.

4. Issue all applicable wake turbulence advisories.

REFERENCE-

FAA Order JO 8260.49, Para 13.0, *Wake Turbulence Requirements*.

FAA Order JO 7210.3, Para 10-4-6, *Simultaneous Independent Approaches*.

FAA Order JO 7110.65, Para 2-1-20, *Wake Turbulence Cautionary Advisories*.

FAA Order JO 7110.65, Para 5-5-4, *Minima*.

h. Consideration should be given to known factors that may in any way affect the safety of the instrument approach phase of flight when conducting SOIA to parallel runways. Factors include but are not limited to wind direction/velocity, wind-shear alerts/reports, severe weather activity, etc. Closely monitor weather activity that could impact the final approach course. Weather conditions in the vicinity of the final approach course may dictate a change of the approach in use.

REFERENCE-

FAA Order JO 7110.65, Para 5-1-9, *Radar Service Termination*.

FAA Order JO 7110.65, Para 5-9-2, *Final Approach Course Interception*.

5-9-10. SIMULTANEOUS INDEPENDENT APPROACHES TO WIDELY-SPACED PARALLEL RUNWAYS WITHOUT FINAL MONITORS

TERMINAL

a. Simultaneous independent approaches to widely-spaced parallel runways may only be conducted where instrument approach charts specifically authorize simultaneous approaches.

b. Apply the following minimum separation when conducting simultaneous independent approaches to runway centerlines that are separated by more than 9,000 feet with a field elevation at or below 5,000 feet MSL, or 9,200 feet between runway centerlines with a field elevation above 5,000 feet MSL:

1. Provide a minimum of 1,000 feet vertical or a minimum of 3 miles radar separation between aircraft:

(a) during turn-on to parallel final approach, or

(b) conducting EoR operations, until aircraft are established on a published segment of an approach authorized for EoR operations.

NOTE-

Aircraft are considered EoR on an initial or intermediate segment of an instrument approach authorized for EoR operations after the approach clearance has been issued, read back by the pilot and the aircraft is observed on the published procedure (lateral and vertical path, and within any procedure specified speed restriction), and is conducting a simultaneous independent parallel approach with an authorized simultaneous instrument approach to a parallel runway.

REFERENCE-

FAA Order JO 7210.3, Para 10-4-7, *Simultaneous Widely-Spaced Parallel Operations*.

P/CG Term – Required Navigation Performance (RNP).

P/CG Term – Established on RNP Concept.

2. Provide the minimum applicable radar separation between aircraft on the same final approach course.

REFERENCE-

FAA Order JO 7110.65, Para 5-5-4, *Minima*.

c. The following conditions are required when applying the minimum separation on widely-spaced parallel courses allowed in subparagraph b:

1. Straight-in landings will be made.

2. The approach system, radar, and appropriate frequencies are operating normally.

3. Inform aircraft that simultaneous approaches are in use prior to aircraft departing an outer fix. This information may be provided through the ATIS.

4. Clear an aircraft to descend to the appropriate glideslope/glidepath intercept altitude soon enough to provide a period of level flight to dissipate excess speed. Provide at least 1 mile of straight flight prior to the final approach course intercept.

NOTE–

Not applicable to approaches with RF legs.

5. Separate final and local controllers are required for each final. Aircraft on the final must be on the appropriate final controller frequency for that runway.

6. Transfer of communication to the tower controller's frequency must be specified in a facility directive and/or Letter of Agreement.

d. The following procedures must be used by the final approach controllers:

NOTE–

There is no requirement for establishment of a NTZ.

1. Instruct the aircraft to return to the correct final approach course when that aircraft is observed to overshoot the turn-on or continue on a track which deviates from the final approach course in the direction of the adjacent approach course.

PHRASEOLOGY–

YOU HAVE CROSSED THE FINAL APPROACH COURSE. TURN (left/right) IMMEDIATELY AND RETURN TO THE FINAL APPROACH COURSE,

or

TURN (left/right) AND RETURN TO THE FINAL APPROACH COURSE.

2. Instruct aircraft on adjacent final approach course to alter course to avoid the deviating aircraft when an aircraft is observed, or in the controller's judgment, has deviated from the final approach course in the direction of the adjacent approach course.

PHRASEOLOGY–

TRAFFIC ALERT, (call sign), TURN (left/right) IMMEDIATELY HEADING (degrees), CLIMB AND MAINTAIN (altitude)

e. Consideration should be given to known factors that may in any way affect the safety of the instrument approach phase of flight when simultaneous approaches are being conducted to parallel runways. Factors include, but are not limited to, wind direction/velocity, wind-shear alerts/reports, severe weather activity, etc. Closely monitor weather activity that could impact the final approach course. Weather conditions in the vicinity of the final approach course may dictate a change of approach in use.

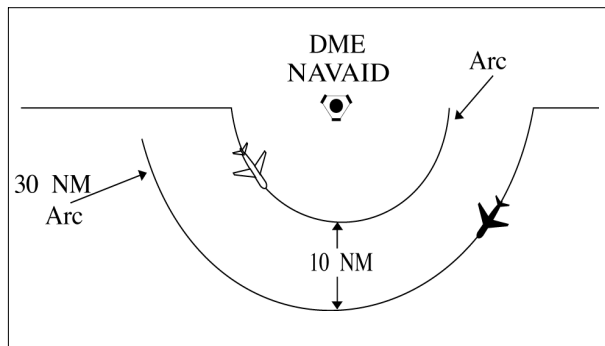
REFERENCE–

FAA Order JO 7110.65, Para 5–9–2, Final Approach Course Interception.

5–9–11. TRANSITIONAL PROCEDURE

When aircraft are conducting simultaneous dependent, independent, or any approaches allowing for reduced separation, and one of the aircraft executes a go-around or has its approach clearance terminated and prior to losing the approved reduced separation, control instructions must be expeditiously issued to increase separation between the applicable aircraft. These control instructions must establish approved separation (for example, altitude and/or lateral separation via divergence). In addition, wake turbulence cautionary advisories must be issued in accordance with paragraph 2–1–20, Wake Turbulence Cautionary Advisories.

FIG 6-5-2
DME Arc Minima

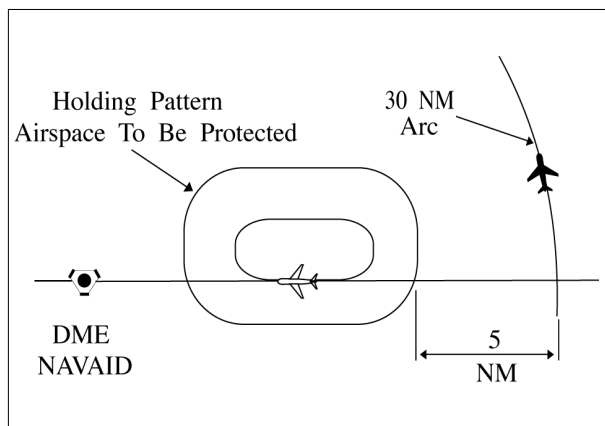


REFERENCE-

FAA Order JO 7110.65, Para 2-5-2, NAVAID Terms.

- a. Between different arcs about a NAVAID regardless of direction of flight:
 1. At 35 miles or less from the NAVAID- 10 miles.
 2. More than 35 miles from the NAVAID- 20 miles.
- b. Between an arc about a NAVAID and other airspace to be protected: (See FIG 6-5-3.)

FIG 6-5-3
DME Arc Minima



NOTE-

The other airspace to be protected may be a MOA, a holding pattern, airway or route, ATCAA, Warning Area, Restricted Area, Prohibited Area, etc.

1. At 35 miles or less from the NAVAID- 5 miles.
2. More than 35 miles from the NAVAID- 10 miles.

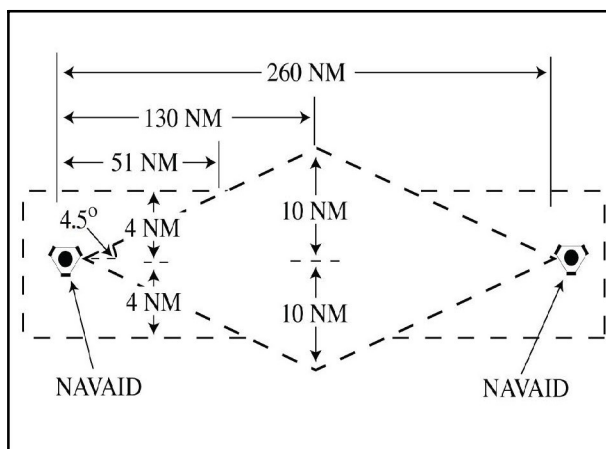
PHRASEOLOGY-

VIA (number of miles) MILE ARC (direction) OF (name of DME NAVAID).

6-5-4. MINIMA ALONG OTHER THAN ESTABLISHED AIRWAYS OR ROUTES

Protect airspace along other than established airways or routes as follows: (See FIG 6-5-4.)

FIG 6-5-4
Minima Along Other Than Established Airways or Routes



REFERENCE-

P/CG Term – Airway.

P/CG Term – Route.

a. Direct courses and course changes of 15 degrees or less:

1. Via NAVAIDs or radials FL 600 and below– *4 miles* on each side of the route to a point 51 miles from the NAVAID, then increasing in width on a $4\frac{1}{2}$ degree angle to a width of *10 miles* on each side of the route at a distance of 130 miles from the NAVAID.

2. Via degree-distance fixes for aircraft authorized under paragraph 4-4-3, Degree-Distance Route Definition for Military Operations.

(a) Below FL 180– *4 miles* on each side of the route.

(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 nonradar 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 nonradar airspace, provide clearance direct to the named point in nonradar airspace in accordance with subparagraphs a4(a) through (c).

5. If transitioning between two random point-to-point routes, GNSS-equipped aircraft being provided nonradar 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–

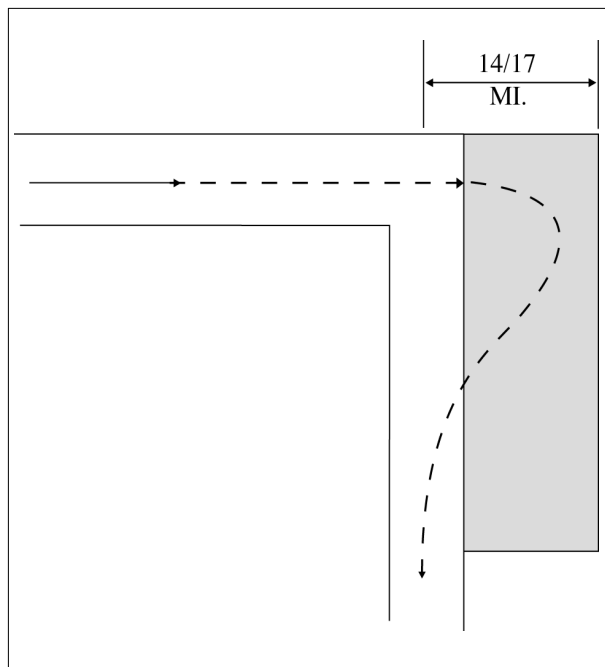
FAA Order JO 7110.65, Para 4–4–1, Route Use.

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 subparagraphs a1 or 2.

2. FL 180 to FL 230 inclusive– 14 miles.

3. Above FL 230 to FL 600 inclusive– 17 miles.

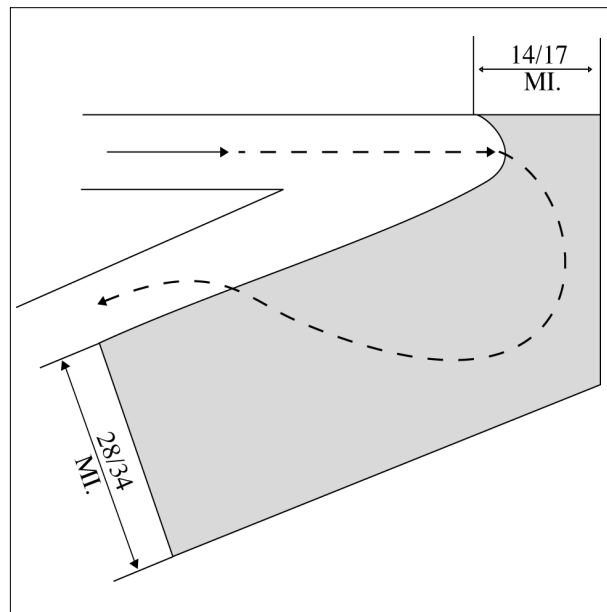
c. When course change is 91 degrees through 180 degrees, protect the airspace on the overflown side beginning at the point where the course changes as follows: (See FIG 6–5–6.)

1. Below FL 180– same as subparagraphs 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
Overflow Side Minima
91 to 180 Degrees

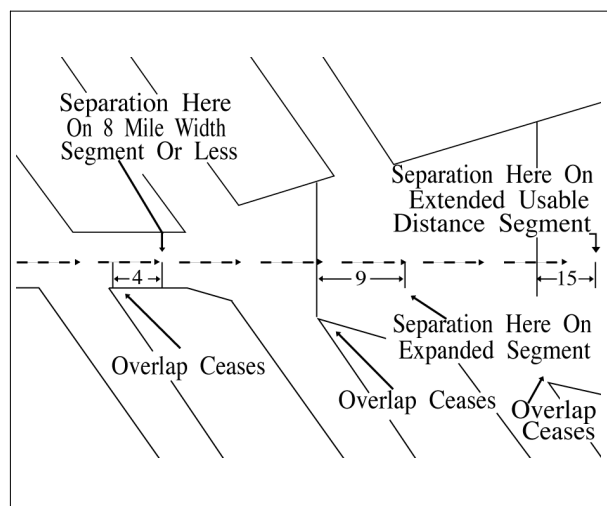


- d. After the course changes specified in subparagraphs b or c have been completed and the aircraft is back on course, the appropriate minima in subparagraph a may be used.

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.

departed the holding/approach fix inbound at the designated time, maintaining 2,000 until cleared for approach at point A. The #1 aircraft has been sighted, enabling the controller to issue approach clearance to the #2 aircraft at point A.

INTERPRETATION–

[7110.65, 5–9–5b, Approach Separation Responsibility and Chapter 6, Section 7, Timed Approaches \(6–19–2015\)](#)

- c. Release the aircraft to the tower before it reaches the final approach fix.

6–7–3. SEQUENCE INTERRUPTION

Interrupt the established timed approach sequence if necessary to allow an aircraft to execute a different type of approach.

6–7–4. LEVEL FLIGHT RESTRICTION

If the weather report indicates an aircraft will be in IFR conditions over the final approach fix (nonprecision approach) or the outer marker or the fix used in lieu of the outer marker (precision approach) when paragraph 6–7–2, Approach Sequence, subparagraph b is applied, clear the second aircraft for an approach early enough to allow at least 1 minute of level flight before crossing the final approach fix/outer marker or the fix used in lieu of the outer marker.

6–7–5. INTERVAL MINIMA

- a. Except as provided in subparagraph b, use a 2–minute or a 5–mile radar interval as the minimum between successive approaches.

REFERENCE–

FAA Order JO 7110.65, Para 5–9–5, Approach Separation Responsibility.

FAA Order JO 7110.65, Para 6–7–1, Application.

FAA Order JO 7110.65, Para 6–7–2, Approach Sequence.

WAKE TURBULENCE APPLICATION

- b. Use the following time or radar interval as the minimum interval:
 - 1. Behind super:
 - (a) Heavy – 3 minutes or 6 miles.
 - (b) Large – 3 minutes or 7 miles.
 - (c) Small – 4 minutes or 8 miles.
 - 2. Small behind heavy – 3 minutes or 6 miles.
- c. Increase the interval, as necessary, taking into account the:
 - 1. Relative speeds of the aircraft concerned.
 - 2. Existing weather conditions.
 - 3. Distance between the approach fix and the airport.
 - 4. Type of approach being made.

6–7–6. TIME CHECK

Issue a time check to an aircraft before specifying a time to leave the approach fix inbound unless the aircraft is vectored to the final approach course.

6–7–7. MISSED APPROACHES

- a. If weather conditions are such that an aircraft will likely miss an approach, issue an alternative missed approach procedure to the next aircraft.

b. If an aircraft misses an approach, allow the next aircraft to continue the approach if it has been assigned an alternative missed approach procedure. Retain radar control or hold any remaining aircraft at assigned altitudes until traffic conditions permit the issuance of approach clearances.

c. When paragraph 6-7-2, Approach Sequence, subparagraph b is applied and the first aircraft misses an approach, retain radar control or clear the second aircraft to maintain the last assigned altitude (minimum holding altitude) and return to the holding/approach fix to hold until traffic conditions permit the issuance of approach clearances.

PHRASEOLOGY–

(ACID), TRAFFIC, (clock position and distance), (direction) BOUND, (type of aircraft), (intentions and other relevant information). If required, (ACID), REPORT TRAFFIC IN SIGHT or DO YOU HAVE IT IN SIGHT? If the pilot reports traffic in sight, or the answer is in the affirmative, (ACID), MAINTAIN VISUAL SEPARATION

(d) If the pilot reports the traffic in sight and will maintain visual separation (the pilot must state both), the controller may “approve” the operation instead of restating the instructions.

PHRASEOLOGY–

(ACID), APPROVED.

NOTE–

Pilot-applied visual separation between aircraft is achieved when the controller has instructed the pilot to maintain visual separation and the pilot acknowledges with their call sign or when the controller has approved pilot-initiated visual separation.

(e) If the aircraft are on converging courses, inform the other aircraft of the traffic and that visual separation is being applied.

(f) Advise the pilots if the radar targets appear likely to merge.

NOTE–

Issue this advisory in conjunction with the instruction to maintain visual separation, the advisory to the other aircraft of the converging course, or thereafter if the controller subsequently becomes aware that the targets are merging.

EXAMPLE–

“Radar targets appear likely to merge.”

PHRASEOLOGY–

(ACID) TRAFFIC, (clock position and distance), (direction)–BOUND, (type of aircraft), ON CONVERGING COURSE, HAS YOU IN SIGHT AND WILL MAINTAIN VISUAL SEPARATION.

REFERENCE–

FAA Order JO 7110.65, Para 7–4–1, Visual Approach.

FAA Order JO 7110.65, Para 7–4–2, Vectors for Visual Approach.

(g) Advise the pilots if either aircraft is a heavy.

(h) Issue wake turbulence cautionary advisories in accordance with paragraph 2–1–20.

INTERPRETATION–

[7110.65, 7–2–1b, Visual Separation \(5–24–2017\)](#)

[7110.65, 7–2–1c, Visual Separation \(7–17–2015\)](#)

c. Nonapproach control towers may be authorized to provide visual separation between aircraft within surface areas or designated areas when approved separation is provided before and after the application of visual separation. The nonapproach control tower must apply the procedures contained in subparagraph a1 or a2, when applying visual separation.

PHRASEOLOGY–

VISUAL SEPARATION APPROVED BETWEEN (ACID) AND (ACID),

and for departing aircraft,

(departing/succeeding aircraft) (ACID), RELEASED.

d. If the nonapproach control tower controller states to the radar controller that they will provide visual separation between arrivals, departures/arrivals and/or successive departures, and states the call signs of all aircraft involved, the radar controller can approve the application of visual separation as requested.

PHRASEOLOGY–

VISUAL SEPARATION APPROVED and for departing/succeeding aircraft, (ACIDs) RELEASED

NOTE–

A nonapproach control tower by accepting authorization for visual separation becomes responsible for ensuring that separation. Separation of IFR aircraft before and after application of visual separation is an IFR control function that must

be applied by the Approach/Departure/En Route facility. Separation requirements also apply to VFR aircraft when IFR, Class B, Class C or TRSA separation services are required.

REFERENCE–

FAA Order JO 7110.65, Para 4–8–11, Practice 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 directed to:

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

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

NOTE–

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

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

REFERENCE–

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

FAA Order JO 7110.65, Para 2-1-20, Wake Turbulence Cautionary Advisories.

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

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

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

FAA Order JO 7210.3, Para 10-3-15, Go-around/Missed Approach.

P/CG Term – Go-around.

AIM, Para 5-4-23, Visual Approach.

7-4-2. VECTORS FOR VISUAL APPROACH

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

PHRASEOLOGY–

(Ident) FLY HEADING

or

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

(If appropriate)

WEATHER NOT AVAILABLE.

NOTE–

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

REFERENCE–

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

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

FAA Order JO 7110.65, Para 7–4–3, Clearance for Visual Approach.

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

FAA Order JO 7110.65, Para 7–6–7, Sequencing.

FAA Order JO 7110.65, Para 7–7–3, Separation.

7–4–3. CLEARANCE FOR VISUAL APPROACH

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

NOTE–

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

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

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.

REFERENCE–

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

INTERPRETATION–

[7110.65 7–4–3b, Clearance for Visual Approach and 4–7–10b\(2\), Approach Information \(12–1–2014\)](#)

c. Clear an aircraft for a visual approach when:

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

NOTE–

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

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

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

PHRASEOLOGY–

(at locations with an operating control tower)

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

or

(at locations without an operating control tower)

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

(and if appropriate)

WEATHER NOT AVAILABLE

or

VERIFY THAT YOU HAVE THE (airport) WEATHER.

REFERENCE–

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

d. All aircraft following a heavy, or a small aircraft following a B757, must be informed of the airplane manufacturer and/or model.

EXAMPLE–

“Cessna Three Four Juliett, following a Boeing 757, 12 o’clock, six miles.”

or

“Cessna Three Four Juliett, following a Seven fifty seven, 12 o’clock, six miles.”

REFERENCE–

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

NOTE–

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

REFERENCE–

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

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

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

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

EXAMPLE–

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

REFERENCE–

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

7–4–4. APPROACHES TO MULTIPLE RUNWAYS

a. All aircraft must be informed that approaches are being conducted to parallel, intersecting, or converging runways. This may be accomplished through use of the ATIS.

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

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

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

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

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

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

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

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

INTERPRETATION–

[7110.65 7-4-4, Approaches to Multiple Runways \(8-14-2015\)](#)

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

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

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

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

NOTE–

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

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

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

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

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

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

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

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

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

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

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

NOTE—

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

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

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

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

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

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

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

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

NOTE—

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

REFERENCE—

FAA Order JO 7110.65, Para 7-7-3, Separation.

FAA Order JO 7110.65, Para 7-8-3, Separation.

FAA Order JO 7110.65, Para 7-9-4, Separation.

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

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

- a. There is an operating control tower.
- b. The published name of the CVFP and the landing runway are specified in the approach clearance, the reported ceiling at the airport of intended landing is at least 500 feet above the MVA/MIA, and the visibility is 3 miles or more, unless higher minimums are published for the particular CVFP.
- c. When using parallel or intersecting/converging runways, the criteria specified in paragraph 7-4-4, Approaches to Multiple Runways, are applied.
- d. An aircraft not following another aircraft on the approach reports sighting a charted visual landmark, or reports sighting a preceding aircraft landing on the same runway and has been instructed to follow that aircraft.

PHRASEOLOGY—

(Ident) CLEARED (name of CVFP) APPROACH.

7-4-6. RNAV VISUAL FLIGHT PROCEDURES (RVFP)

RNAV Visual Flight Procedures (RVFPs) are special procedures flown in VMC and clear of clouds and used by authorized operators only. Clear an aircraft for an RVFP when:

- a. Requested by the pilot, or if necessary, as addressed in a Letter of Agreement (LOA).
- b. The pilot reports the airport in sight or, at locations with an operating control tower, the preceding aircraft in sight.
- c. An altitude is assigned at or above the MVA/MIA, before issuing an approach clearance when conducting an RVFP. The pilot should join the RVFP at the beginning of the charted procedure, or if necessary, may join at another waypoint along the path of the charted procedure, except for waypoints beginning or within an RF leg.
- d. The official weather at the airport of intended landing indicates VFR and should meet or exceed the ceiling and visibility specified on the RVFP.
- e. The published name of the RVFP and the landing runway are specified in the approach clearance.

PHRASEOLOGY–

(Ident) CLEARED RNAV VISUAL RUNWAY (number) APPROACH

NOTE–

Refer to the facility RVFP LOAs, if applicable, to determine the authorized operators.

REFERENCE–

FAA Order 8260.60, Special Procedures.

7-4-7. CONTACT APPROACH

Clear an aircraft for a contact approach only if the following conditions are met:

- a. The pilot has requested it.

NOTE–

When executing a contact approach, the pilot is responsible for maintaining the required flight visibility, cloud clearance, and terrain/obstruction clearance. Unless otherwise restricted, the pilot may find it necessary to descend, climb, and/or fly a circuitous route to the airport to maintain cloud clearance and/or terrain/obstruction clearance. It is not in any way intended that controllers will initiate or suggest a contact approach to a pilot.

- b. The reported ground visibility is at least 1 statute mile.
- c. A standard or special instrument approach procedure has been published and is functioning for the airport of intended landing.
- d. Approved separation is applied between aircraft so cleared and other IFR or SVFR aircraft. When applying vertical separation, do not assign a fixed altitude but clear the aircraft at or below an altitude which is at least 1,000 feet below any IFR traffic but not below the minimum safe altitude prescribed in 14 CFR Section 91.119.

NOTE–

14 CFR Section 91.119 specifies the minimum safe altitude to be flown:

- (a) Anywhere.*
- (b) Over congested areas.*
- (c) Other than congested areas. To provide for an emergency landing in the event of power failure and without undue hazard to persons or property on the surface.*
- (d) Helicopters. May be operated at less than the minimums prescribed in (b) and (c) above if the operation is conducted without hazard to persons or property on the surface.*

- e. An alternative clearance is issued when weather conditions are such that a contact approach may be impracticable.

PHRASEOLOGY–

CLEARED CONTACT APPROACH,

And if required,

AT OR BELOW (altitude) (routing).

IF NOT POSSIBLE, (alternative procedures), AND ADVISE.

Section 5. Special VFR (SVFR)

7-5-1. AUTHORIZATION

- a. SVFR operations in weather conditions less than basic VFR minima are authorized:

REFERENCE-

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

1. At any location not prohibited by 14 CFR Part 91, Appendix D or when an exemption to 14 CFR Part 91 has been granted and an associated LOA established. 14 CFR Part 91 does not prohibit SVFR helicopter operations.

2. Only within the lateral boundaries of Class B, Class C, Class D, or Class E surface areas, below 10,000 feet MSL.

3. Only when requested by the pilot.

4. On the basis of weather conditions reported at the airport of intended landing/departure.

REFERENCE-

FAA Order JO 7110.65, Para 7-5-6, Climb to VFR.

FAA Order JO 7110.65, Para 7-5-7, Ground Visibility Below One Mile.

5. When weather conditions are not reported at the airport of intended landing/departure and the pilot advises that VFR cannot be maintained and requests SVFR.

PHRASEOLOGY-

CLEARED TO ENTER/OUT OF/THROUGH, (name) SURFACE AREA

and if required,

(direction) OF (name) AIRPORT (specified routing),
and

MAINTAIN SPECIAL V-F-R CONDITIONS,

and if required,

AT OR BELOW (altitude below 10,000 feet MSL)

or as applicable under an exemption from 14 CFR Part 91,

CLEARED FOR (coded arrival or departure procedure) ARRIVAL/DEPARTURE, (additional instructions as required).

REFERENCE-

FAA Order JO 7110.65, Para 2-4-22, Airspace Classes.

b. SVFR operations may be authorized for aircraft operating in or transiting a Class B, Class C, Class D, or Class E surface area when the primary airport is reporting VFR but the pilot advises that basic VFR cannot be maintained.

NOTE-

The basic requirements for issuance of a SVFR clearance in subparagraph a apply with the obvious exception that weather conditions at the controlling airport are not required to be less than basic VFR minima.

7-5-2. PRIORITY

- a. SVFR flights may be approved only if arriving and departing IFR aircraft are not delayed.

EXAMPLE-

1. A SVFR aircraft has been cleared to enter a Class B, Class C, Class D, or Class E surface area and subsequently an IFR

aircraft is ready to depart or is in position to begin an approach. Less overall delay might accrue to the IFR aircraft if the SVFR aircraft is allowed to proceed to the airport and land, rather than leave, a Class B, Class C, Class D, or Class E surface area or be repositioned to provide IFR priority.

2. A SVFR aircraft is number one for takeoff and located in such a position that the number two aircraft, an IFR flight, cannot taxi past to gain access to the runway. Less overall delay might accrue to the IFR aircraft by releasing the SVFR departure rather than by having the aircraft taxi down the runway to a turnoff point so the IFR aircraft could be released first.

NOTE—

The priority afforded IFR aircraft over SVFR aircraft is not intended to be so rigidly applied that inefficient use of airspace results. The controller has the prerogative of permitting completion of a SVFR operation already in progress when an IFR aircraft becomes a factor if better overall efficiency will result.

b. Inform an aircraft of the anticipated delay when a SVFR clearance cannot be granted because of IFR traffic. Do not issue an EFC or expected departure time.

PHRASEOLOGY—

EXPECT (number) MINUTES DELAY, (additional instructions as necessary).

REFERENCE—

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

FAA Order JO 7110.65, Para 5–6–1, Application.

7–5–3. SEPARATION

a. Apply nonradar or visual separation between:

1. SVFR fixed-wing aircraft.
2. SVFR fixed-wing aircraft and SVFR Helicopters.
3. SVFR fixed-wing aircraft and IFR aircraft.

NOTE—

1. Vertical separation is authorized between SVFR fixed-wing aircraft and IFR aircraft as prescribed in FAA Order JO 7110.65, paragraph 7–5–4, Altitude Assignments

2. Due to the requirements for SVFR fixed-wing aircraft to maintain 1-mile flight visibility and to remain clear of clouds, radar separation is not authorized during SVFR fixed-wing operations. Radar vectors are authorized, as prescribed in paragraph 5–6–1, Application, subparagraph f, to expedite the entrance, exit, and transition of SVFR fixed-wing aircraft through the appropriate surface area.

REFERENCE—

FAA Order JO 7110.65, Chapter 6, Nonradar.

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

FAA Order JO 7110.65, Para 7–5–4, Altitude Assignment.

b. Apply nonradar, visual, or IFR radar separation between:

1. SVFR Helicopters.
2. SVFR Helicopters and IFR aircraft.

NOTE—

1. Vertical separation is authorized between SVFR helicopters and IFR aircraft as prescribed in FAA Order JO 7110.65, paragraph 7–5–4, Altitude Assignments.

2. Radar separation as prescribed in Chapter 5 may be applied provided that the facility conducting the operation is authorized to provide radar separation services in accordance with FAA Order JO 7210.3, paragraph 10-5-3, Functional Use of Certified Tower Radar Displays (CTRD), subparagraph b5, and subparagraph d. Facilities that are not delegated airspace or separation responsibility must use CTRDs in accordance with FAA Order JO 7110.65, paragraph 3–1–9, Use of Tower Radar Displays, subparagraph b.

c. Alternate SVFR helicopter separation minima may be established when warranted by the volume and/or complexity of local helicopter operations. Alternate SVFR helicopter separation minima must be established with an LOA with the helicopter operator which must specify, as a minimum, that SVFR helicopters are to maintain visual reference to the surface and adhere to the following aircraft separation minima:

Section 8. Class C Service– Terminal

7–8–1. APPLICATION

Apply Class C service procedures within the designated Class C airspace and the associated outer area. Class C services are designed to keep ATC informed of all aircraft within Class C airspace, not to exclude operations. Two-way radio communications and operational transponder are normally required for operations within Class C airspace, but operations without radio communications or transponder can be conducted by LOA, facility directive, or special arrangement with Class C airspace controlling facility.

REFERENCE–

FAA Order JO 7110.65, Para 7–2–1, Visual Separation.
14 CFR Section 91.215, ATC Transponder and Altitude Reporting Equipment and Use.

7–8–2. CLASS C SERVICES

- a. Class C services include the following:
 - 1. Sequencing of all aircraft to the primary airport.
 - 2. Standard IFR services to IFR aircraft.
 - 3. Separation, traffic advisories, and safety alerts between IFR and VFR aircraft.
 - 4. Mandatory traffic advisories and safety alerts between VFR aircraft.
- b. Provide Class C services to all aircraft operating within Class C airspace.
- c. Provide Class C services to all participating aircraft in the outer area.
- d. Aircraft should not normally be held. However, if holding is necessary, inform the pilot of the expected length of delay.
- e. When an outage occurs, affecting the preferred radar sensor, advise aircraft that Class C services are not available and, if appropriate, when to contact the tower, except when other radar resources are available and to the extent that coverage is sufficient, continue to provide radar services.

NOTE–

Limited radar coverage in one portion of a Class C area does not justify denial of Class C radar service in the entire area.

REFERENCE–

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

7–8–3. SEPARATION

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

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

NOTE–

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

- b. 500 feet vertical separation.
- c. Target resolution, except when ISR is being displayed.

NOTE–

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

REFERENCE–

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

7-8-4. ESTABLISHING TWO-WAY COMMUNICATIONS

Class C service requires pilots to establish two-way radio communications before entering Class C airspace. If the controller responds to a radio call with, “(a/c call sign) standby,” radio communications have been established and the pilot can enter Class C airspace. If workload or traffic conditions prevent immediate provision of Class C services, inform the pilot to remain outside Class C airspace until conditions permit the services to be provided.

PHRASEOLOGY–

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

REFERENCE–

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

7-8-5. ALTITUDE ASSIGNMENTS

a. When necessary to assign altitudes to VFR aircraft, assign altitudes that meet the MVA, MSA, or minimum IFR altitude criteria.

b. Aircraft assigned altitudes which are contrary to 14 CFR Section 91.159 must be advised to resume altitudes appropriate for the direction of flight when the altitude is no longer needed for separation, when leaving the outer area, or when terminating Class C service.

PHRASEOLOGY–

RESUME APPROPRIATE VFR ALTITUDES.

REFERENCE–

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

7-8-6. EXCEPTIONS

a. VFR helicopters need not be separated from IFR helicopters. Traffic information and safety alerts must be issued as appropriate.

b. Hot air balloons need not be separated from IFR aircraft. Traffic information and safety alerts must be issued as appropriate.

7-8-7. ADJACENT AIRPORT OPERATIONS

a. Aircraft that will penetrate Class C airspace after departing controlled airports within or adjacent to Class C airspace must be provided the same services as those aircraft departing the primary airport. Procedures for handling this situation must be covered in a LOA or a facility directive, as appropriate.

b. Aircraft departing uncontrolled airports within Class C airspace must be handled using procedures advertised in a Letter to Airmen.

7-8-8. TERMINATION OF SERVICE

Unless aircraft are landing at secondary airports or have requested termination of service while in the outer area, provide services until the aircraft departs the associated outer area. Terminate Class C service to aircraft landing at other than the primary airport at a sufficient distance from the airport to allow the pilot to change to the appropriate frequency for traffic and airport information.

PHRASEOLOGY–

CHANGE TO ADVISORY FREQUENCY APPROVED,

or

CONTACT (facility identification).

Section 9. Class B Service Area– Terminal

7-9-1. APPLICATION

- a. Apply Class B services and procedures within the designated Class B airspace.
- b. No person may operate an aircraft within Class B airspace unless:
 - 1. The aircraft has an operable two-way radio capable of communications with ATC on appropriate frequencies for that Class B airspace.
 - 2. The aircraft is equipped with the applicable operating transponder and automatic altitude reporting equipment specified in paragraph (a) of 14 CFR Section 91.215, except as provided in paragraph (d) of that section.

7-9-2. VFR AIRCRAFT IN CLASS B AIRSPACE

- a. VFR aircraft must obtain an ATC clearance to operate in Class B airspace.

REFERENCE–

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

FAA Order JO 7110.65, Para 2-4-22, Airspace Classes.

PHRASEOLOGY–

CLEARED THROUGH/TO ENTER/OUT OF BRAVO AIRSPACE,

and as appropriate,

VIA (route). MAINTAIN (altitude) WHILE IN BRAVO AIRSPACE.

or

CLEARED AS REQUESTED.

(Additional instructions, as necessary.)

REMAIN OUTSIDE BRAVO AIRSPACE. (When necessary, reason and/or additional instructions.)

NOTE–

- 1. Assignment of radar headings, routes, or altitudes is based on the provision that a pilot operating in accordance with VFR is expected to advise ATC if compliance will cause violation of any part of the CFR.
- 2. Separation and sequencing for VFR aircraft is dependent upon radar. Efforts should be made to segregate VFR traffic from IFR traffic flows when a radar outage occurs.
- b. Approve/deny requests from VFR aircraft to operate in Class B airspace based on workload, operational limitations and traffic conditions.

c. Inform the pilot when to expect further clearance when VFR aircraft are held either inside or outside Class B airspace.

- d. Inform VFR aircraft when leaving Class B airspace.

PHRASEOLOGY–

LEAVING (name) BRAVO AIRSPACE,

and as appropriate,

RESUME OWN NAVIGATION, REMAIN THIS FREQUENCY FOR TRAFFIC ADVISORIES, RADAR SERVICE TERMINATED, SQUAWK ONE TWO ZERO ZERO.

7-9-3. METHODS

a. To the extent practical, clear large turbine engine-powered airplanes to/from the primary airport using altitudes and routes that avoid VFR corridors and airspace below the Class B airspace floor where VFR aircraft are operating.

NOTE-

Pilots operating in accordance with VFR are expected to advise ATC if compliance with assigned altitudes, headings, or routes will cause violation of any part of the CFR.

b. Vector aircraft to remain in Class B airspace after entry. Inform the aircraft when leaving and reentering Class B airspace if it becomes necessary to extend the flight path outside Class B airspace for spacing.

NOTE-

14 CFR Section 91.131 states that “Unless otherwise authorized by ATC, each person operating a large turbine engine-powered airplane to or from a primary airport for which a Class B airspace area is designated must operate at or above the designated floors of the Class B airspace area while within the lateral limits of that area.” Such authorization should be the exception rather than the rule.

REFERENCE-

FAA Order JO 7110.65, Para 5-1-6, Deviation Advisories.

c. Aircraft departing controlled airports within Class B airspace will be provided the same services as those aircraft departing the primary airport.

REFERENCE-

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

7-9-4. SEPARATION

a. Standard IFR services to IFR aircraft.

b. VFR aircraft must be separated from VFR/IFR aircraft/ helicopter/rotorcraft that weigh more than 19,000 pounds and turbojets by no less than:

1. 1 ½ miles separation, or

NOTE-

When ISR is being displayed, discontinue 1 ½ -NM separation.

2. 500 feet vertical separation, or

NOTE-

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

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

NOTE-

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

c. 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.*

Chapter 8. Offshore/Oceanic Procedures

Section 1. General

8-1-1. ATC SERVICE

Provide air traffic control service in oceanic controlled airspace in accordance with the procedures in this chapter except when other procedures/minima are prescribed in a directive or a letter of agreement.

REFERENCE–

FAA Order JO 7110.65, Para 1-1-10, Procedural Letters of Agreement (LOA).

8-1-2. OPERATIONS IN OFFSHORE AIRSPACE AREAS

Provide air traffic control service in offshore airspace areas in accordance with procedures and minima in this chapter. For those situations not covered by this chapter, the provisions in this Order must apply.

8-1-3. VFR FLIGHT PLANS

VFR flights in Oceanic FIRs may be conducted in meteorological conditions equal to or greater than those specified in 14 CFR Section 91.155, Basic VFR weather minimums. Operations on a VFR flight plan are permitted only between sunrise and sunset and only within:

- a. Miami, Houston, and San Juan Oceanic Control Areas (CTAs) below FL 180.
- b. Within the Oakland FIR when operating less than 100 NM seaward from the shoreline within controlled airspace.
- c. All Oceanic FIR airspace below the Oceanic CTAs.

8-1-4. TYPES OF SEPARATION

Separation must consist of at least one of the following:

- a. Vertical separation;
- b. Horizontal separation, either;
 1. Longitudinal; or
 2. Lateral;
- c. Radar separation, as specified in Chapter 5, Radar, where radar coverage is adequate.

8-1-5. ALTIMETER SETTING

Within oceanic control areas, unless directed and/or charted otherwise, altitude assignment must be based on flight levels and a standard altimeter setting of 29.92 inches Hg.

8-1-6. RECEIPT OF POSITION REPORTS

When a position report affecting separation is not received, take action to obtain the report no later than *10 minutes* after the control estimate, unless otherwise specified.

8-1-7. OCEANIC ERROR REPORT PROCEDURES

FAA Order JO 7210.632 establishes procedures for reporting Gross Navigation Errors (GNE), height errors, time (longitudinal) errors, intervention, and Special Area of Operations (SAO) verification in oceanic airspace. This data is needed for risk modeling activities to support separation standard reductions.

8-1-8. USE OF CONTROL ESTIMATES

Control estimates are the estimated position of aircraft, with reference to time as determined by the ATC automation system in use or calculated by the controller using known wind patterns, previous aircraft transit times, pilot progress reports, and pilot estimates. These estimates may be updated through the receipt of automated position reports and/or manually updated by the controller. Control estimates must be used when applying time-based separation minima.

8-1-9. RVSM OPERATIONS

Controller responsibilities for non-RVSM aircraft operating in RVSM airspace must include but not be limited to the following:

a. Ensure non-RVSM aircraft are not permitted in RVSM airspace unless they meet the criteria of excepted aircraft and are previously approved by the operations supervisor/CIC.

b. In addition to those aircraft listed in Chapter 2, Section 1, paragraph 2-1-29, RVSM Operations, in this order, the following aircraft operating within oceanic airspace or transiting to/from oceanic airspace are excepted:

1. Aircraft being initially delivered to the State of Registry or Operator;
2. Aircraft that was formerly RVSM approved but has experienced an equipment failure and is being flown to a maintenance facility for repair in order to meet RVSM requirements and/or obtain approval;
3. Aircraft being utilized for mercy or humanitarian purposes;
4. Within the Oakland, Anchorage, and Arctic FIR's, an aircraft transporting a spare engine mounted under the wing.

(a) These exceptions are accommodated on a workload or traffic-permitting basis.

(b) All other requirements contained in paragraph 2-1-29, RVSM Operations are applicable to this section.

REFERENCE-

FAA Order JO 7110.65, Para 2-1-29, RVSM Operations.

8-1-10. PROCEDURES FOR WEATHER DEVIATIONS AND OTHER CONTINGENCIES IN OCEANIC CONTROLLED AIRSPACE

Aircraft must request an ATC clearance to deviate. Since aircraft will not fly into adverse meteorological conditions, weather deviation requests should take priority over routine requests. If there is no traffic in the horizontal dimension, ATC must issue clearance to deviate from track; or if there is conflicting traffic in the horizontal dimension, ATC must separate aircraft by establishing vertical separation, then issue clearance to deviate from track. If there is conflicting traffic and ATC is unable to establish required separation, ATC must:

- a. Advise the pilot unable to issue clearance for requested deviation;
- b. Advise the pilot of conflicting traffic; and
- c. Request pilot's intentions.

PHRASEOLOGY-

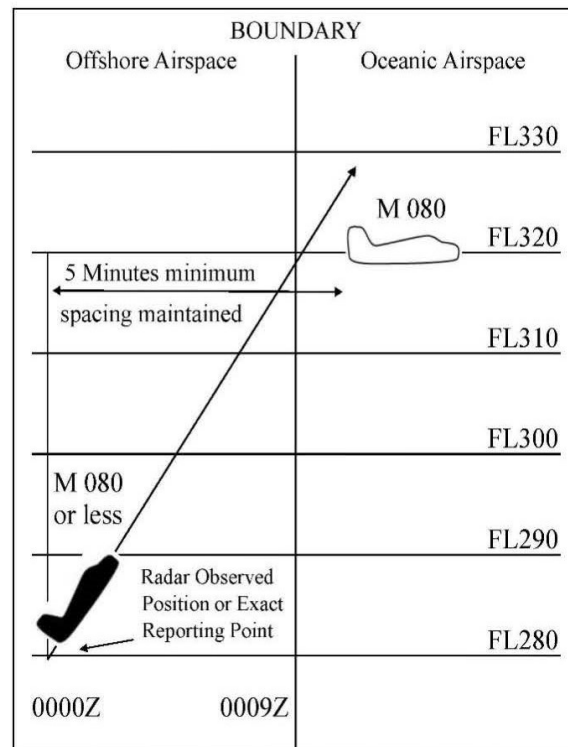
UNABLE (requested deviation), TRAFFIC IS (call sign, position, altitude, direction), SAY INTENTIONS.

NOTE-

1. The pilot will advise ATC of intentions by the most expeditious means available.

2. In the event that pilot/controller communications cannot be established or a revised ATC clearance is not available, pilots will follow the procedures outlined in the Aeronautical Information Publication (AIP), Section ENR 7.3, Special Procedures for In-flight Contingencies in Oceanic Airspace; and AC 91-70, Oceanic and Remote Continental Airspace Operations.

FIG 8-5-3
Transitioning From Offshore to Oceanic Airspace Same Direction



8-5-5. RADAR IDENTIFICATION APPLICATION

Radar separation standards may be applied between radar identified aircraft and another aircraft not yet identified that is in transit from oceanic airspace or nonradar offshore airspace into an area of known radar coverage where radar separation is applied provided:

- a. Direct radio communications is maintained with one of the aircraft involved and there is an ability to communicate with the other;
- b. The transiting aircraft is RNAV equipped;
- c. The performance of the radar/system is adequate;

REFERENCE-

FAA Order JO 7110.65, Para 5-1-1, Presentation and Equipment Performance.

- d. Flight data on the aircraft that has not been radar identified indicate that it is equipped with a standard transponder and there is no known information that the transponder is not operating;
- e. Radar separation standards are maintained between the radar identified aircraft and any other observed targets until the transitioning aircraft is radar identified or nonradar separation is established;
- f. The facility has identified areas of known radar coverage, incorporated those areas into facility standard operating procedures (SOP), and provided training to the controllers.
- g. This procedure is also applicable to aircraft in transit from oceanic airspace into Guam Control Area (CTA), San Juan CTA and Honolulu CTA radar coverage areas.
- h. **EXCEPTION:** This procedure is not authorized if there is insufficient time for the controller to establish other approved separation in the event of a delay or inability to establish radar identification of the transiting

aircraft taking into consideration factors such as aircraft performance characteristics, type, and speed; weather, traffic conditions; workload; frequency congestion; etc.

REFERENCE—

FAA Order JO 7110.65, Para 2–2–6, IFR Flight Progress Data, Subpara b.

FAA Order JO 7110.65, Para 8–1–8, Use of Control Estimates.

Section 7. North Atlantic ICAO Region

8-7-1. APPLICATION

Provide air traffic control services in the North Atlantic ICAO Region with the procedures and minima contained in this section except when noted otherwise.

8-7-2. VERTICAL SEPARATION

Provide vertical separation in accordance with Chapter 4, IFR, Section 5, Altitude Assignment and Verification.

8-7-3. LONGITUDINAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 3, Longitudinal Separation, apply the following:

a. Supersonic flight:

1. 10 minutes provided that:

(a) both aircraft are in level flight at the same Mach number or the aircraft are of the same type and are both operating in cruise climb, and one of the following;

(1) The aircraft concerned have reported over a common point; or,

(2) If the aircraft have not reported over a common point, the appropriate time interval being applied between aircraft exists and will exist at the common point; or,

(3) If a common point does not exist, the appropriate time interval being applied between aircraft exists and will exist at significant points along each track.

2. 15 minutes between aircraft in supersonic flight not covered in subparagraph a1 above.

b. Turbojet operations (*subsonic flight*):

1. Apply the prescribed minima in accordance with paragraph 8-3-3, Mach Number Technique; or

2. Where tracks diverge from the common point and the following aircraft is maintaining a greater Mach Number than the preceding aircraft:

(a) At least 10 minutes longitudinal separation exists at the point where the tracks diverge; and

(b) At least 5 minutes longitudinal separation will exist where minimum lateral separation is achieved (*whichever is estimated to occur first*);

(1) At or before the next significant point (normally within ten degrees of longitude along track(s)),
or

(2) Within 90 minutes of the time the following aircraft passes the common point, or

(3) Within 600 NM of the common point.

3. Apply 15 minutes between all other turbojet aircraft.

c. Nonturbojet operations:

1. Apply 20 minutes between aircraft operating in the West Atlantic (WAT), or

2. Apply 30 minutes between aircraft operating outside of the WAT.

NOTE-

The WAT area is defined as beginning at a point 27°00'N/77°00'W direct to 20°00'N/67°00'W direct to 18°00'N/62°00'W

direct to 18°00'N/60°00'W direct to 38°30'N/60°00'W direct to 38°30'N/69°15'W, thence counterclockwise along the New York Oceanic CTA/FIR boundary to the Miami Oceanic CTA/FIR boundary, thence southbound along the Miami Oceanic CTA/FIR boundary to the point of beginning.

d. Clear an aircraft for an ADS-B In Trail Procedure (ITP) climb or descent provided the following conditions are satisfied:

1. The ITP climb or descent has been requested by the pilot;
2. The aircraft identification of each reference aircraft in the ITP request exactly matches the Item 7 - aircraft identification of the corresponding aircraft's filed flight plan;
3. The reported ITP distance between the ITP aircraft and any reference aircraft is 15 NM or more;
4. Both the ITP aircraft and reference aircraft are either on:
 - (a) same identical tracks and any turn at a waypoint shall be limited to less than 45 degrees; or
 - (b) same tracks with no turns permitted that reduce required separation during the ITP.

NOTE–

Same identical tracks are where the angular difference is zero degrees.

5. No speed or route change clearance shall be issued to the ITP aircraft until the ITP climb or descent is completed;
6. The altitude difference between the ITP aircraft and any reference aircraft shall be 2000 ft or less;
7. No instruction to amend speed, altitude or route shall be issued to any reference aircraft until the ITP climb or descent is completed;
8. The maximum closing speed between the ITP aircraft and each reference aircraft shall be Mach 0.06; and
9. The ITP aircraft shall not be a reference aircraft in another ITP clearance.

NOTE–

ATOP is designed to check for the above criteria prior to allowing the minima to be provided.

e. Minima based on distance using Automatic Dependent Surveillance – Contract (ADS-C):

1. Apply the minima as specified in TBL 8–7–1 between aircraft on the same track within airspace designated for Required Navigation Performance (RNP), provided:

- (a) Direct controller/pilot communication via voice or Controller Pilot Data Link Communications (CPDLC) is established, and
- (b) The required ADS-C periodic reports are maintained and monitored by an automated flight data processor (for example, ATOP).

**TBL 8–7–1
ADS–C Criteria**

Minima				
Standard	RNP	RCP See Note 1	RSP See Note 2	Maximum ADS-C Periodic Reporting Interval
50 NM	10	240	180	27 minutes
50 NM	4	240	180	32 minutes
30 NM	4	240	180	10 minutes

NOTE–

1. *Required Communication Performance (RCP).*

2. *Required Surveillance Performance (RSP).*

2. Aircraft on reciprocal tracks may be cleared to climb or descend to or through the altitude(s) occupied by another aircraft provided:

- (a) An ADS-C position report on at least one of the aircraft has been received beyond the passing point, and
- (b) The aircraft have passed each other by the applicable separation minimum.

NOTE–

ATOP has been designed to check for the above criteria prior to allowing the minima to be provided.

3. When an ADS-C periodic or waypoint change event report is overdue by *3 minutes*, the controller must take action to obtain an ADS-C report.

4. If no report is received within *6 minutes* of the time the original report was due, the controller must take action to apply another form of separation.

5. Aircraft on the same track may be cleared to climb or descend through the level of another aircraft provided:

(a) The longitudinal distance between the aircraft is determined from near simultaneous ADS-C demand reports and the ATOP software is used to ensure the following conditions are met;

(b) The longitudinal distance between the aircraft, as determined in a) above, is not less than:

(1) 15 NM when the preceding aircraft is at the same speed or faster than the following aircraft; or

(2) 25 NM when the following aircraft is not more than Mach 0.02 faster than the preceding aircraft

(c) The altitude difference between aircraft is not more than 2000 ft;

(d) The clearance is for a climb or descent of 4000 ft or less;

(e) Both aircraft are filed as single flights not flying in formation with other aircraft;

(f) Both aircraft are in level flight at a single altitude;

(g) Both aircraft are same direction;

(h) Neither aircraft are on a weather deviation;

(i) Neither aircraft have an open CPDLC request for a weather deviation;

(j) Neither aircraft are on an offset with a rejoin clearance; and

(k) The clearance is issued with a restriction that ensures vertical separation is re-established within 15 minutes from the first demand report request.

8-7-4. LATERAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 4, Lateral Separation, apply the following:

a. 23 NM to approved aircraft (at a minimum, RNP 4, RCP 240, and RSP 180) operating within airspace designated for 23 NM lateral separation when direct controller/pilot communications via voice or Controller Pilot Data Link Communications (CPDLC), and the required ADS-C contracts are maintained and monitored by an automated flight data processor (e.g., ATOP).

b. 50 NM between Required Navigation Performance (RNP 4 or RNP 10) approved aircraft that operate in the New York Oceanic CTA/FIR or the San Juan Oceanic CTA/FIR or the Atlantic portion of the Miami Oceanic CTA/FIR.

NOTE–

This reduced lateral separation must not be used if track-keeping capability of the aircraft has been reduced for any reason.

c. 60 NM or 1 degree latitude between:

1. Supersonic aircraft operating above FL 275.

2. Aircraft which have MNPS or NAT HLA authorization and which:

- (a) Operate within NAT HLA; or
- (b) Are in transit to or from NAT HLA; or
- (c) Operate for part of their flight within, above, or below NAT HLA.

NOTE—

This reduced lateral separation must not be used if track-keeping capability of the aircraft has been reduced for any reason.

- d. *90 NM or 1 and 1/2 degrees latitude* between aircraft not approved for RNP 4 or RNP 10 and which:

■ 1. Operate on routes or in areas within WAT, the San Juan CTA/FIR or the Atlantic portion of the Miami CTA/FIR;

2. Operate between points in the U.S. or Canada, and Bermuda;

3. Operate west of 55° West between the U.S., Canada, or Bermuda and points in the Caribbean ICAO Region.

- e. *120 NM or 2 degrees latitude* between aircraft not covered by subparagraphs a, c or d above.

NOTE—

■ *Tracks may be spaced with reference to their difference in latitude, provided that in any interval of 10 degrees of longitude the change in latitude of at least one of the tracks does not exceed 3 degrees when operating south of 58° North.*

- (a) An ADS-C position report on at least one of the aircraft has been received beyond the passing point, and
- (b) The aircraft have passed each other by the applicable separation minimum.

NOTE—

ATOP has been designed to check for the above criteria prior to allowing the minima to be provided.

3. When an ADS-C periodic or waypoint change event report is overdue by *3 minutes*, the controller must take action to obtain an ADS-C report.

4. If no report is received within *6 minutes* of the time the original report was due, the controller must take action to apply another form of separation.

5. Aircraft on the same track may be cleared to climb or descend through the level of another aircraft provided:

(a) The longitudinal distance between the aircraft is determined from near simultaneous ADS-C demand reports and the ATOP software is used to ensure the following conditions are met;

(b) The longitudinal distance between the aircraft, as determined in a) above, is not less than:

(1) 15 NM when the preceding aircraft is at the same speed or faster than the following aircraft; or

(2) 25 NM when the following aircraft is not more than Mach 0.02 faster than the preceding aircraft

(c) The altitude difference between aircraft is not more than 2000 ft;

(d) The clearance is for a climb or descent of 4000 ft or less;

(e) Both aircraft are filed as single flights not flying in formation with other aircraft;

(f) Both aircraft are in level flight at a single altitude;

(g) Both aircraft are same direction;

(h) Neither aircraft are on a weather deviation;

(i) Neither aircraft have an open CPDLC request for a weather deviation;

(j) Neither aircraft are on an offset with a rejoin clearance; and

(k) The clearance is issued with a restriction that ensures vertical separation is re-established within 15 minutes from the first demand report request.

8-8-4. LATERAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 4, Lateral Separation, apply the following:

a. 23 NM to approved aircraft (at a minimum, RNP 4, RCP 240, and RSP 180) operating within airspace designated for 23 NM lateral separation when direct controller/pilot communications via voice or Controller Pilot Data Link Communications (CPDLC), and the required ADS-C contracts are maintained and monitored by an automated flight data processor (e.g., ATOP).

b. 50 NM between Required Navigation Performance (RNP 4 or RNP 10) approved aircraft that:

1. Operate in the New York Oceanic CTA/FIR; or

2. Operate in the San Juan Oceanic CTA/FIR; or

3. Operate in the Houston Oceanic CTA/FIR; or

4. Operate in the Atlantic or Gulf of Mexico portion of the Miami CTA/FIR.

NOTE—

This reduced lateral separation must not be used if track-keeping capability of the aircraft has been reduced for any reason.

c. 60 NM between:

1. Supersonic aircraft operating above FL 275 within the New York oceanic CTA/FIR.
2. Supersonic aircraft operating at or above FL 450 not covered in subparagraph 1 above.
3. Aircraft which have MNPS or NAT HLA authorization and which:
 - (a) Operate within NTA HLA; or
 - (b) Are in transit to or from NAT HLA; or
 - (c) Operate for part of their flight within, above, or below NAT HLA.

NOTE—

This reduced lateral separation must not be used if track-keeping capability of the aircraft has been reduced for any reason.

d. 90 NM between aircraft not approved for RNP 4 or RNP 10 and which:

1. Operate within WAT; or
2. Operate west of 55° West between the U.S., Canada, or Bermuda and points in the Caribbean ICAO Region.

e. 100 NM between aircraft operating west of 55° West not covered by subparagraphs a, c, or d above.

f. 120 NM between aircraft operating east of 55° West.

8-8-5. VFR CLIMB AND DESCENT

a. In the Houston, Miami, and San Juan CTAs, IFR flights may be cleared to climb and descend in VFR conditions only:

1. When requested by the pilot; and
2. Between sunrise and sunset.

b. Apply the following when the flight is cleared:

1. If there is a possibility that VFR conditions may become impractical, issue alternative instructions.
2. Issue traffic information to aircraft that are not separated in accordance with the minima in this section.

- (j) Neither aircraft are on an offset with a rejoin clearance; and
- (k) The clearance is issued with a restriction that ensures vertical separation is re-established within 15 minutes from the first demand report request.

d. Minima based on distance *without* ADS-C:

1. Apply *50 NM* between aircraft cruising, climbing or descending on the same track or reciprocal track that meet the requirements for and are operating within airspace designated for RNP-10 operations provided:

- (a) Direct controller/pilot communication via voice or CPDLC is maintained; and
- (b) Separation is established by ensuring that at least *50 NM* longitudinal separation minima exists between aircraft positions as reported by reference to the same waypoint.

(1) *Same track aircraft* – whenever possible ahead of both; or

(2) *Reciprocal track aircraft* – provided that it has been positively established that the aircraft have passed each other.

2. Distance verification must be obtained from each aircraft at least every *24 minutes* to verify that separation is maintained.

3. If an aircraft fails to report its position within *3 minutes* after the expected time, the controller must take action to establish communication. If communication is not established within *8 minutes* after the time the report should have been received, the controller must take action to apply another form of separation.

NOTE–

When same track aircraft are at, or are expected to reduce to, the minima, speed control techniques should be applied in order to maintain the required separation.

8–9–4. LATERAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 4, Lateral Separation, apply the following:

a. Within areas where Required Navigation Performance separation and procedures are authorized, apply *50 NM* to RNP 4 or RNP 10 approved aircraft.

b. Apply *23 NM* to approved aircraft (at a minimum, RNP 4, RCP 240, and RSP 180) operating within airspace designated for *23 NM* lateral separation when direct controller/pilot communications via voice or Controller Pilot Data Link Communications (CPDLC), and the required ADS-C contracts are maintained and monitored by an automated flight data processor (e.g., ATOP).

c. Apply *100 NM* to aircraft not covered by subparagraphs a and b. ■

Section 2. Special Operations

9-2-1. AIRCRAFT CARRYING DANGEROUS MATERIALS

a. Provide the following special handling to military aircraft or military contracted aircraft carrying dangerous materials when:

1. The words “dangerous cargo,” or “inert devices,” or both are contained in the remarks section of the filed flight plan, or

NOTE—

1. *Certain types of military flights carrying dangerous materials require strict adherence to military regulations and flight planning along carefully selected routes. These flights must avoid heavily populated areas.*

2. *“Inert devices” are devices containing no dangerous materials but closely resembling nuclear or explosive items that are classified as dangerous and could be easily mistaken for their dangerous counterparts.*

2. The pilot uses these words in radio communication.

b. If it becomes necessary to issue a clearance to amend the route/altitude, advise the pilot:

1. Of the proposed change, and

2. The amount of delay to expect if it is necessary to maintain the present route/altitude.

c. When it becomes necessary for the pilot to refuse a clearance amending his/her route/altitude, he/she will advise if the traffic delay is acceptable or if an alternate route/altitude is desired. In such cases, offer all possible assistance.

d. When the aircraft is provided an en route descent, do not vector the aircraft from the planned route unless the pilot concurs.

e. Use special patterns and routings in areas where they have been developed for these flights. If special patterns and routings have not been developed, employ normal procedures.

9-2-2. CELESTIAL NAVIGATION TRAINING

EN ROUTE

a. Approve flight plans specifying celestial navigation only when it is requested for USAF or USN aircraft.

NOTE—

An ATC clearance must be obtained by the pilot before discontinuing conventional navigation to begin celestial navigation training. The pilot will advise when discontinuing celestial navigation and resuming conventional navigation. Celestial navigation training will be conducted within 30 NM of the route centerline specified in the en route clearance unless otherwise authorized by ATC. During celestial navigation training, the pilot will advise ATC before initiating any heading changes which exceed 20 degrees.

b. Within conterminous U.S. airspace, limit celestial navigation training to transponder-equipped aircraft within areas of ARTCC radar coverage.

c. Prior to control transfer, ensure that the receiving controller is informed of the nature of the celestial navigation training leg.

REFERENCE—

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

9-2-3. EXPERIMENTAL AIRCRAFT OPERATIONS

a. When notified that an experimental aircraft requires special handling:

NOTE–

14 CFR Section 91.319(d)(3) requires that each person operating an aircraft with an experimental certificate must notify the control tower of the experimental nature of the aircraft when operating into or out of airports with operating control towers.

1. Clear the aircraft according to pilot requests as traffic permits and if not contrary to ATC procedures.
 2. Once approved, do not ask the pilot to deviate from a planned action except to preclude an emergency situation.
- b. At locations where volume or complexity of experimental aircraft operations warrant, a letter of agreement may be consummated between the facility and operator.

9-2-4. FAA RESEARCH AND DEVELOPMENT FLIGHTS

When coordinated in advance and traffic permits, approve requests for special flight procedures from aircraft participating in FAA research and development test activities. These special procedures must be applied to participating aircraft/vehicles.

NOTE–

Special flight procedures for FAA research and development test activities must be approved by the facility air traffic manager prior to their use.

9-2-5. FLYNET

ATC personnel at the first facility establishing contact with an aircraft using the code word FLYNET must:

- a. Provide expeditious handling.
- b. Report it to the operations supervisor (OS)/controller-in-charge (CIC), for reporting to the National Tactical Security Operations (NTSO) Air Traffic Security Coordinator (ATSC) through the Domestic Events Network (DEN).
- c. Add to the remarks section of the flight plan that DEN notification has been accomplished.

NOTE–

The code word FLYNET indicates that an aircraft is transporting a nuclear emergency support team or other disaster response teams to a potential or actual nuclear/radiological incident, or to a potential or actual incident involving dangerous chemical agents or other hazardous materials. It is in the public interest that they reach their destination as rapidly as possible.

EXAMPLE–

“Miami Center, Energy One Two FLYNET, request clearance direct Dulles.”

REFERENCE–

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

FAA Order JO 7610.4, Para 9-4-1, FLYNET Flights, Nuclear Emergency Support Teams.

9-2-6. IFR MILITARY TRAINING ROUTES

- a. Except for aircraft operating in the same altitude reservation, clear aircraft into an MTR provided separation will be applied between successive aircraft unless otherwise covered in a letter of agreement between the military scheduling activity and the concerned ATC facility.

PHRASEOLOGY–

CLEARED INTO IR (designator).

MAINTAIN (altitude),

or

MAINTAIN IR (designator) ALTITUDE(S),

or

MAINTAIN AT OR BELOW (altitude),

or

CRUISE (altitude),

and if required,

CROSS (fix) AT OR LATER THAN (time).

b. Unless otherwise covered in a letter of agreement between the military scheduling activity and the concerned FAA facility, clear aircraft to exit an MTR.

PHRASEOLOGY–

CLEARED TO (destination/clearance limit) FROM IR (designator/exit fix) VIA (route).

MAINTAIN (altitude).

c. If the provisions of subparagraph a above cannot be accomplished, MTRs may be designated for MARSA operations. To preclude an inadvertent compromise of MARSA standards by ATC, appropriate MARSA application for such routes must be covered in a letter of agreement with the military scheduling activity. Establish separation between aircraft as soon as practicable after operation on the designated MARSA route is ended.

NOTE–

For designated MARSA routes, the military assumes responsibility for separation for MTR aircraft that have passed the primary/alternate entry fix until separation is established by ATC after operations on the MARSA route are completed.

d. The lateral airspace to be protected along an MTR is the designated width of the route.

e. Prior to an aircraft entering an MTR, request the pilot's estimate for the route's exit/alternate exit fix, the pilot's requested altitude after exiting and, if applicable, the number of reentries on a Strategic Training Range. ■

PHRASEOLOGY–

(Call sign) VERIFY YOUR EXIT FIX ESTIMATE AND REQUESTED ALTITUDE AFTER EXIT,

and if applicable,

THE NUMBER OF REENTRIES.

f. Forward estimates for exit/alternate exit fixes, requested altitude after exit, and, if applicable, the number of reentries on the Strategic Training Range. ■

g. Apply the procedures of paragraph 6–1–2, Nonreceipt of Position Report, based upon the pilot's estimate for the route exit fix.

h. Clearance may be issued to amend or restrict operations on a route for ATC considerations. Where a route has been designated MARSA in accordance with subparagraph c, ATC must not amend or restrict operations in such a manner as to compromise MARSA provisions.

NOTE–

When MARSA is provided through route scheduling and circumstances prevent the pilot from entering the route within established time limits, it must be the responsibility of the pilot to inform the ATC facility and advise his/her intentions.

i. If an aircraft on an IR experiences a two-way radio communications failure and you are unable to determine if the aircraft is proceeding VFR in accordance with 14 CFR Section 91.185(b) or the aircraft has not been positively radar identified:

1. Provide separation to the destination airport based on the aircraft complying with the following:

(a) Maintain to the exit/alternate exit fix the higher of the following altitudes:

- (1) The minimum IFR altitude for each of the remaining route segment(s) remaining on the route.
- (2) The highest altitude assigned in the last ATC clearance.

(b) Depart the exit/alternate exit fix at the appropriate altitude specified in subparagraph (a) above, then climb/descend to the altitude filed in the flight plan for the remainder of the flight, or

NOTE–

*In the event of a two-way communications failure, ATC will be based on the following anticipated pilot action at the exit fix. Unless otherwise covered in a letter of agreement, and if the pilot is unable to comply with the VFR provisions of 14 CFR Section 91.185/FLIP IFR Supplement, the pilot will exercise his/her emergency authority, squawk transponder **Code 7700**, depart the exit/alternate exit fix and climb/descend (continuing to squawk 7700) to the altitude filed in the flight plan. Subsequent transponder operations will be in accordance with paragraph 10–4–4, Communications Failure. Air traffic controller action from the exit fix is as prescribed in paragraph 10–1–1, Emergency Determinations.*

- (c) Proceed in accordance with the lost communication procedure contained in letters of agreement.

- 2. Continue to monitor the last ATC assigned discrete code.

NOTE–

*Pilots who experience a two-way radio failure will adjust their transponder to **Code 7700** during climb/descent to altitude filed for the next leg of the flight plan; then change to **Code 7600** for a period of 15 minutes. At the end of each 15–minute period, he/she will squawk 7700 for a period of 1 minute; all other times he/she will squawk 7600.*

j. Impose delays, if needed, to eliminate conflict with nonparticipating IFR aircraft when necessary to preclude denial of IR usage. Advise the pilot of the expected length and reason for delay.

9–2–7. INTERCEPTOR OPERATIONS

Provide maximum assistance to expedite the movement of interceptor aircraft on active air defense (scrambles) missions until the unknown aircraft is identified in accordance with the policies and procedures published in FAA Order JO 7610.4, Sensitive Procedures and Requirements for Special Operations.

NOTE–

The FAA and the military have mutually agreed to the implementation of policies and procedures for control of air defense interceptor operations. Effective coordination and cooperation between FAA and the military at all levels are essential if policy objectives are to be met.

- a. The ADCF initiating the SCRAMBLE must identify the mission as an active air defense mission.
- b. ATC services must be used for active air defense missions insofar as the circumstances and situation permits.
- c. Upon request, the ATC facility must expedite transfer of the control jurisdiction of the interceptors to the requesting ADCF.

9–2–8. SPECIAL INTEREST SITES

- a. Immediately relay any reports or information regarding unusual aircraft activities in the vicinity of special interest sites such as nuclear power plants, power plants, dams, refineries, etc., to supervisory/CIC personnel.

NOTE–

Air traffic controllers have no responsibilities to monitor or observe aircraft in the vicinity of special interest sites unless directed by supervisory/CIC personnel.

9–2–9. SPECIAL AIR TRAFFIC RULES (SATR) AND SPECIAL FLIGHT RULES AREA (SFRA)

The Code of Federal Regulations prescribes special air traffic rules for aircraft operating within the boundaries of certain designated airspace. These areas are listed in 14 CFR Part 93 and can be found throughout the NAS. Procedures, nature of operations, configuration, size, and density of traffic vary among the identified areas.

- a. Special Flight Rules Areas are areas of airspace wherein the flight of aircraft is subject to special air traffic rules set forth in 14 CFR Part 93, unless otherwise authorized by air traffic control. Not all areas listed in 14 CFR Part 93 are Special Flight Rules Areas, but special air traffic rules apply to all areas designated as SFRA.

REFERENCE–

14 CFR Part 93, *Special Air Traffic Rules.*

P/CG, *SPECIAL AIR TRAFFIC RULES (SATR)*

P/CG, *SPECIAL FLIGHT RULES AREA (SFRA)*

b. Each person operating an aircraft to, from, or within airspace designated as a SATR area or SFRA must adhere to the special air traffic rules set forth in 14 CFR Part 93, as applicable, unless otherwise authorized or required by ATC.

9–2–10. ATC SECURITY SERVICES FOR THE WASHINGTON, DC, SPECIAL FLIGHT RULES AREA (DC SFRA)

Provide ATC security services at locations where procedures are required for tracking aircraft in security services airspace. ATC security services are designed to support the national security mission of the FAA and other agencies. Two–way radio communications, flight planning, and an operational transponder on an assigned code are required for operations in the designated area.

a. When the assigned code is observed, advise the aircraft to proceed on course/as requested but to remain outside of Class B, C, and/or D airspace as appropriate.

PHRASEOLOGY–

(ACID) *TRANSPONDER OBSERVED PROCEED ON COURSE/AS REQUESTED; REMAIN OUTSIDE (class) AIRSPACE.*

1. Maintain continuous security tracking of VFR aircraft operating in the designated area to assist security forces in situational awareness. Immediately report all instances of loss of radio communication or the inability to conduct security tracking of an aircraft to the operations supervisor (OS)/CIC and wait for instructions.

2. Basic separation services to aircraft, for example, IFR, SVFR, Class B, Class C, TRSA, do not apply to ATC security tracking.

INTERPRETATION–

[7110.65, 9–2–10, Washington, DC, Special Flight Rules Area \(DC SFRA\)/ATC Security Services \(9–27–2016\)](#)

3. Aircraft with operating transponders, but without operating Mode C (altitude), require specific authorization from ATC to operate in the SFRA. ATC must coordinate with the Domestic Events Network (DEN) before approval.

4. Aircraft flying too low for radar coverage must be instructed to report landing or exiting the 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.

9-2-11. 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).

9-2-12. LAW ENFORCEMENT AND SENSITIVE GOVERNMENT MISSIONS

a. Provide the maximum assistance possible to law enforcement aircraft when requested.

1. If requested by the pilot/flight crew, communicate with law enforcement aircraft on a separate and unique communications frequency whenever possible.

2. Ensure assistance to law enforcement aircraft does not compromise approved separation minima or place the aircraft in unsafe proximity to terrain, obstructions or other aircraft.

3. When requested, assist law enforcement in locating suspect aircraft.

4. Forward any information received pertaining to stolen aircraft to the OS/CIC for reporting on the Domestic Events Network (DEN).

REFERENCE–

FAA Order JO 7210.3, Para 2-7-7, Cooperation With Law Enforcement Agencies.

b. Sensitive government missions.

1. Sensitive government missions include inflight identification, surveillance, interdiction and pursuit activities conducted by government aircraft for national defense, homeland security, and intelligence or law enforcement purposes.

2. Provide support to national security and homeland defense activities as specified in paragraph 2-1-2, Duty Priority.

3. To facilitate accomplishment of sensitive government missions, exemptions from specified parts of Title 14 of the Code of Federal Regulations have been granted to designated departments and agencies. Each organization's exemption identifies its responsibilities for notifying ATC of its intent to operate under an exemption before commencing operations.

REFERENCE–

FAA Order JO 7210.3, Para 19–3–1, Authorizations and Exemptions from Title 14, Code of Federal Regulations (14 CFR).

4. Departments and agencies that conduct sensitive government missions are assigned U.S. special call signs. Additionally, some have pre-assigned beacon codes to permit them to apprise ATC of ongoing mission activities and solicit air traffic assistance. To support these sensitive government missions, ATC must:

(a) Not change the sensitive beacon codes requested or displayed by these operators.

(b) To the maximum extent possible, ensure the full call sign designator of aircraft conducting sensitive government operations is entered into FAA automation systems.

(c) Not alter or abbreviate the U.S. special call signs used by aircraft for sensitive government operations.

REFERENCE–

FAA Order JO 7110.67, Air Traffic Management Security Procedures and Requirements for Special Operations.

9–2–13. MILITARY AERIAL REFUELING

Authorize aircraft to conduct aerial refueling along published or special tracks at their flight plan altitudes, unless otherwise requested.

PHRASEOLOGY–

CLEARED TO CONDUCT REFUELING ALONG (number) TRACK,

or

FROM (fix) TO (fix),

and

MAINTAIN BLOCK (altitude) THROUGH (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. MARSAs begin 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 MARSAs.

4. MARSAs end 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 MARSAs are terminated.

REFERENCE–

FAA Order JO 7110.65, Para 2–1–11, Use of MARSAs.

FAA Order JO 7110.65, Para 5–5–8, Additional Separation for Formation Flights.

FAA Order JO 7610.14, Chapter 5, Aerial Refueling.

a. Provide radar assistance to the rendezvous for participating aircraft:

1. When requested, and

2. By providing vertical separation prior to MARSAs 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.

NOTE–

Requests for receiver aircraft to make code changes during air refueling diverts the receiver pilot's attention during a critical phase of flight.

- c. When issuing an initial air refueling clearance, you may request a receiver to squawk standby when the receiver reaches a point 3 miles from the tanker.

NOTE–

1. Receiver aircraft will squawk normal when separation from the tanker is greater than 3 miles.

2. Once rendezvous is completed, heading and altitude assignments may be made with the tanker concurrence with MARSA remaining in effect.

3. Upon rendezvous completion, the tanker must keep receiver aircraft within 3 miles of the tanker until MARSA is terminated.

- d. After MARSA has been declared, you should avoid issuing course or altitude changes prior to rendezvous.

NOTE–

Altitude or course changes issued will automatically void MARSA.

- e. Do not use the altitude vacated during the refueling operation until the refueling aircraft has reported reaching the next IFR altitude.

REFERENCE–

FAA Order JO 7110.65, Para 6–6–2, Exceptions.

- f. Approve requests by the tanker pilot for vectors or alternative routes or altitudes as follows:

1. Furnish vectors or alternative altitudes at any time.

2. Furnish nonradar routes only after the refueling aircraft have passed the ARCP.

NOTE–

1. *To meet a training requirement that aerial refueling be accomplished in a nonradar environment, the military has requested that vectors be furnished only upon request.*

2. *The tanker commander is responsible for coordinating all inflight requests with other aircraft in the refueling mission before submission of such requests to the center.*

3. *Normally, aircraft conducting aerial refueling operations will utilize at least three consecutive altitudes.*

- g. Unless a vector or alternative route has been furnished, clear the aircraft to depart the refueling track at a navigational reference point or egress fix.

- h. Request an aircraft to report the ARIP, ARCP, or egress fix as necessary.

PHRASEOLOGY–**REPORT:**

A–R–I–P,

or

A–R–C–P,

or

EGRESS FIX.

- i. Expect the following procedures in addition to those required by the appropriate parts of Title 14 of the Code of Federal Regulations in the event of two-way communications failure:

1. The tanker will depart the track from the highest altitude in the block.

2. The receiver will depart the track from the lowest altitude in the block.

3. Aircraft will squawk 7600 for at least 2 minutes prior to departing the track.

REFERENCE–

FAA Order JO 7110.65, Para 9–2–14, Military Operations Above FL 600.

9–2–14. MILITARY OPERATIONS ABOVE FL 600

Control aircraft operating above FL 600 using the following procedures:

- a. Flight plans involving supersonic flight are required 16 hours in advance of proposed departure times for processing and approval by the ARTCCs concerned. The originating ARTCC, where the flight plan is first filed, may waive the 16–hour advance filing requirement.
- b. The route of flight must be defined by at least one high altitude fix within each ARTCC area without regard to the distance between fixes. Additionally, the entry and exit points of turns of 90 degrees or more will be designated.
- c. Elapsed times from takeoff to the first fix in each ARTCC area must be included in the route of flight.
- d. The ARTCC which originates the flight plan must forward departure times to all ARTCCs responsible for processing the flight plan.
- e. Approval of the flight plan indicates approval of both route and flight levels (if stated) including operations below FL 600 (aerial refueling).

PHRASEOLOGY–

CLEARED AS FILED VIA ROUTE AND FLIGHT LEVELS.

REFERENCE–

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

- f. Separation. Use the following as minima in lieu of the corresponding type of separation prescribed in:

NOTE–

The primary method described to provide separation between two supersonic aircraft is to descend the aircraft at the lower FL and provide vertical separation since the aircraft at the higher FL may not be able to climb rapidly enough to establish the required separation. Another aspect which should be considered is that supersonic aircraft during turns, either programmed or as the result of vectors, will lose a few thousand feet. Vectoring supersonic aircraft seriously affects the range and mission objectives. Radar separation is the preferred method of separating a subsonic aircraft both from another subsonic aircraft or from a supersonic aircraft.

1. Paragraph 4–5–1, Vertical Separation Minima: 5,000 feet.

NOTE–

1. The security requirements of the military services preclude the transmission of actual altitude information on the air/ground or landline circuits. Altitude information for the day should be readily available to the controllers at their positions of operation. The classification requirements of the altitude information remains unchanged.

2. Pilots will report their altitude, using the coded plan, and intended flight profile on initial contact with each ARTCC.

2. Paragraph 6–5–4, Minima Along Other Than Established Airways or Routes: Protect the airspace 25 miles either side of the route centerline. For turns by supersonic aircraft, protect the airspace 75 miles on the overflown side and 25 miles on the other side. For turns by subsonic aircraft, protect the airspace 34 miles on the overflown side and 25 miles on the other side.

REFERENCE–

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

9–2–15. MILITARY SPECIAL USE FREQUENCIES

- a. Assign special use frequency to:

NOTE–

Special use frequencies are assigned to ARTCCs in such a manner that adjacent ARTCCs will not have the same frequency. They are to be used within the ARTCC area jurisdiction from the established FL base of the high altitude sectors and above. Each high altitude sector should have the capability to use the special use frequency on a shared basis.

1. USAF, U.S. Navy, and Air National Guard (ANG) single-pilot jet aircraft formations operating at night or in instrument weather conditions. Formations of five or more USAF aircraft deploying either to a continental U.S. staging base or nonstop to an overseas location are authorized to use special use frequencies at any time. Normally these deployments will be conducted within an altitude reservation.

2. U-2 and B-57 (pressure suit flights) aircraft at all altitudes/FLs except where terminal operations require the assignment of other frequencies.

NOTE–

Aerial refueling operations may require that aircraft leave the special use frequency for communications with the tanker. This will occur when the receiver is approximately 200 miles from the ARCP. The tanker aircraft will remain on the ARTCC assigned frequency and will relay clearances to the receiver as required. An alternate means of communications between the tanker and receiver is HF radio.

3. All aircraft during supersonic flight.

NOTE–

Pilots are expected to request assignment of the special use frequency in the remarks section of the flight plan or before entering supersonic flight. B-57 aircraft engaged in pressure suit operations will use the static call sign KITE and flights will normally be conducted from Dover, Eielson, Ellington, Hickman, Howard, Kirtland, and McClellan Air Force Bases.

4. E-3A AWACS mission crews when operations are being conducted as an MRU in accordance with appropriate letters of agreement.

b. The special use frequency may be assigned as “backup” for the high-altitude sector when direct communications are essential because of a potential emergency control situation.

c. Do not assign the special use frequency to the aircraft in subparagraph a1 above, when they will operate in airspace assigned for special military operations.

9-2-16. AVOIDANCE OF AREAS OF NUCLEAR RADIATION

a. Advise pilots whenever their proposed flight path will traverse a reported or forecasted area of hazardous radiation and reroute the aircraft when requested by the pilot.

REFERENCE–

FAA Order JO 7610.4, Para 4-4-4, Avoidance of Hazardous Radiation Areas.

b. Inform pilots when an airfield of intended landing lies within a reported or forecasted area of hazardous radiation and request the pilot to advise his/her intentions.

9-2-17. SAMP FLIGHTS

Provide special handling to USAF or other government aircraft using the “SAMP” call sign and engaged in aerial sampling/surveying missions for nuclear, chemical, or hazardous material contamination. Approve inflight clearance requests for altitude and route changes to the maximum extent possible. Other IFR aircraft may be cleared so that requests by SAMP aircraft are approved.

REFERENCE–

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

FAA Order JO 7110.65, Para 2-4-20, Aircraft Identification.

FAA Order JO 7610.4, Para 4-4-4, Avoidance of Hazardous Radiation Areas.

FAA Order JO 7210.3, Para 5-3-2, Aerial Sampling/Surveying for Airborne Contamination.

9-2-18. AWACS/NORAD SPECIAL FLIGHTS

Do not delay E-3 AWACS aircraft identified as “AWACS/NORAD Special” flights. The following control actions are acceptable while expediting these aircraft to the destination orbit.

a. En route altitude changes \pm 2,000 feet from the requested flight level.

b. Radar vectors or minor route changes that do not impede progress towards the destination orbit.

NOTE–

NORAD has a requirement to position E–3 AWACS aircraft at selected locations on a time-critical basis. To the extent possible these flights will utilize routes to the destination orbit that have been precoordinated with the impacted ATC facilities. To identify these flights, the words “AWACS/NORAD SPECIAL” will be included as the first item in the remarks section of the flight plan.

9–2–19. WEATHER RECONNAISSANCE FLIGHTS

TEAL and NOAA mission aircraft fly reconnaissance flights to gather meteorological data on winter storms, (NWSOP missions), hurricanes and tropical cyclones (NHOP missions). The routes and timing of these flights are determined by movement of the storm areas and not by traffic flows.

a. When a dropsonde release time is received from a TEAL or NOAA mission aircraft, workload and priorities permitting, controllers must advise the mission aircraft of any traffic estimated to pass through the area of the drop at altitudes below that of the mission aircraft. This traffic advisory must include:

1. Altitude.
2. Direction of flight.
3. ETA at the point closest to drop area (or at the fix/intersection where drop will occur).

NOTE–

A dropsonde is a 14–inch long cardboard cylinder about 2.75 inches in diameter, that weighs approximately 14 ounces (400 grams), and has a parachute attached. When released from the aircraft it will fall at a rate of approximately 2,500 feet per minute. Controllers should recognize that a dropsonde released at FL 310 will be a factor for traffic at FL 210 four minutes later. It is the aircraft commanders responsibility to delay release of dropsondes if traffic is a factor. Aircraft commanders will delay release of dropsondes based solely upon traffic as issued by ATC.

b. When advised that an airborne TEAL or NOAA aircraft is requesting a clearance via CARCAH, issue the clearance in accordance with Chapter 4, IFR, Section 2, Clearances.

REFERENCE–

FAA Order JO 7110.65, Para 4–2–1, Clearance Items.

FAA Order JO 7110.65, Para 4–2–2, Clearance Prefix.

FAA Order JO 7110.65, Para 4–2–3, Delivery Instructions.

c. If a TEAL or NOAA mission aircraft must be contacted but is out of VHF, UHF, and HF radio range, advise the supervisory traffic management coordinator–in–charge.

REFERENCE–

FAA Order JO 7210.3, Para 5–3–4, Weather Reconnaissance Flights.

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

d. Aircraft operations associated with a Weather Reconnaissance Area (WRA) must be conducted in accordance with the Memorandum of Agreement between the National Oceanic and Atmospheric Administration Aircraft Operations Center, U.S. Air Force Reserve Command 53rd Weather Reconnaissance Squadron, and the Federal Aviation Administration Air Traffic Organization in Support of the National Hurricane Operations Plan (FAA Order JO 7610.14, Appendix 3, Document 1), and the associated letters of agreement.

9–2–20. EVASIVE ACTION MANEUVER

Approve a pilot request to conduct an evasive action maneuver only on the basis of a permissible traffic situation. Specify the following items, as necessary, when issuing approval:

NOTE–

The “evasive action” maneuver is performed by a bomber/fighter bomber aircraft at or above FL 250 along a 60 NM long segment of the flight plan route overlying a RBS or other site and includes:

1. Flying a zigzag pattern on both the left and right side of the flight plan route centerline. Altitude deviations are made in conjunction with the lateral maneuvering.
2. Lateral deviations from the route centerline will not normally exceed 12 miles. Altitude variations must not exceed plus or minus 1,000 feet of the assigned flight level; i.e., confined within a 2,000 foot block.

- a. Specific route segment on which the maneuver will take place.
- b. Distance of maximum route deviation from the centerline in miles.
- c. Altitude.

PHRASEOLOGY–**CLEARED TO CONDUCT EVASIVE ACTION****MANEUVER FROM (fix) TO (fix),***and**(number of miles) EITHER SIDE OF CENTERLINE,**and***MAINTAIN (altitude) THROUGH (altitude),***and***COMPLETE MANEUVER AT (fix) AT (altitude).****9–2–21. NONSTANDARD FORMATION/CELL OPERATIONS**

Occasionally the military is required to operate in a nonstandard cell formation and controllers should be knowledgeable of the various tactics employed and the procedures used.

REFERENCE–*FAA Order JO 7610.14, Chapter 7, Section 3, Military Formation Flight.*

- a. Formation leaders are responsible for obtaining ATC approval to conduct nonstandard formation/cell operations.
- b. When nonstandard formation/cell operations have been approved, controllers must assign sufficient altitudes to allow intra-cell vertical spacing of 500 feet between each aircraft in the formation.
- c. Control nonstandard formation/cell operations on the basis that MARSAs are applicable between the participating aircraft until they establish approved separation which is acknowledged by ATC.
- d. Apply approved separation criteria between the approved nonstandard formation/cell envelope and nonparticipating aircraft.
- e. Clear aircraft operating in a nonstandard formation/cell to the breakup fix as the clearance limit. Forward data pertaining to route or altitude beyond the breakup point to the center concerned as a part of the routine flight plan information.
- f. **EN ROUTE.** If the breakup occurs in your area, issue appropriate clearances to authorize transition from formation to individual routes or altitudes. If a breakup cannot be approved, issue an appropriate clearance for the flight to continue as a formation.

Section 3. Overdue Aircraft

10-3-1. OVERDUE AIRCRAFT/OTHER SITUATIONS

a. Consider an aircraft to be overdue and initiate the procedures stated in this section to issue an ALNOT when neither communications nor radar contact can be established and 30 minutes have passed since:

NOTE-

The procedures in this section also apply to an aircraft referred to as “missing” or “unreported.”

1. Its ETA over a specified or compulsory reporting point or at a clearance limit in your area.
2. Its clearance void time.

3. A VFR or IFR aircraft arriving at an airport not served by an air traffic control tower or flight service station fails to cancel a flight plan after receiving instructions on how to cancel.

NOTE-

If you have reason to believe that an aircraft is overdue prior to 30 minutes, take the appropriate action immediately.

b. Consider an aircraft to be in an emergency status and initiate ALNOT procedures in this section immediately when there is an abnormal simultaneous loss of radar and communications with an IFR aircraft or VFR/SVFR aircraft receiving flight following services. This situation may be applicable to an aircraft operating in a nonradar environment and an unexpected/abnormal loss of communications occurs.

c. The ARTCC in whose area the aircraft is reported as overdue, missing or lost will make these determinations and takes any subsequent action required.

d. If you have reason to believe that an aircraft is overdue prior to 30 minutes, take the appropriate action immediately.

e. The center in whose area the aircraft is first unreported or overdue will make these determinations and takes any subsequent action required.

REFERENCE-

FAA Order JO 7110.65, Para 4-3-4, Departure Release, Hold for Release, Release Times, Departure Restrictions, and Clearance Void Times.

10-3-2. INFORMATION TO BE FORWARDED TO ARTCC

TERMINAL

When an aircraft is considered to be in emergency status that may require SAR procedures, or an IFR aircraft is overdue, the terminal facility must alert the appropriate ARTCC and forward the following information, as available:

- a. Flight plan, including color of aircraft, if known.
- b. Time of last transmission received, by whom, and frequency used.
- c. Last position report and how determined.
- d. Aircraft beacon code.
- e. Number of persons on board.
- f. Fuel status.
- g. Facility working aircraft and frequency.
- h. Last known position, how determined, time, estimated present position, and maximum range of flight of the aircraft based on remaining fuel and airspeed.
- i. Position of other aircraft near aircraft's route of flight, when requested.

- j. Whether or not an ELT signal has been heard or reported in the vicinity of the last known position.
- k. Other pertinent information.

REFERENCE–

FAA Order JO 7110.65, Para 10–1–4, Responsibility.

FAA Order JO 7110.65, Para 10–2–5, Emergency Situations.

NOTE–

FSSs serve as the central points for collecting and disseminating information on an overdue or missing aircraft which is not on an IFR flight plan. Non–FSS ATC facilities that receive telephone calls or other inquiries regarding these flights must refer these calls and inquiries to the appropriate FSS.

10–3–3. INFORMATION TO BE FORWARDED TO RCC**EN ROUTE**

When an aircraft is considered to be in emergency status or an IFR aircraft is overdue, the ARTCC must alert the RCC and forward the following information, as available:

- a. Facility and person calling.
- b. Flight plan, including color of aircraft, if known.
- c. Time of last transmission received, by whom, and frequency used.
- d. Last position report and how determined.
- e. Aircraft beacon code.
- f. Action taken by reporting facility and proposed action.
- g. Number of persons on board.
- h. Fuel status.
- i. Facility working aircraft and frequency.
- j. Last known position, how determined, time, estimated present position, and maximum range of flight of the aircraft based on remaining fuel and airspeed.
- k. Position of other aircraft near aircraft's route of flight, when requested.
- l. Whether or not an ELT signal has been heard or reported in the vicinity of the last known position.
- m. Other pertinent information.

REFERENCE–

FAA Order JO 7110.65, Para 10–1–4, Responsibility.

FAA Order JO 7110.65, Para 10–2–5, Emergency Situations.

NOTE–

FSSs serve as the central points for collecting and disseminating information on an overdue or missing aircraft which is not on an IFR flight plan. Non–FSS ATC facilities that receive telephone calls or other inquiries regarding these flights must refer these calls and inquiries to the appropriate FSS.

10–3–4. ALNOT**EN ROUTE**

- a. In addition to routing to the regional office operations center for the area in which the facility is located, issue an ALNOT to all centers and Area B circuits, generally 50 miles on either side of the route of flight from the last reported position to destination. Include the original or amended flight plan, as appropriate, and the last known position of the aircraft. At the recommendation of the RCC or at your discretion, the ALNOT may be issued to cover the maximum range of the aircraft.

NOTE–

1. An ALNOT must be issued before the RCC can begin search and rescue procedures.

Section 4. Control Actions

10-4-1. TRAFFIC RESTRICTIONS

IFR traffic which could be affected by an overdue or unreported aircraft must be restricted or suspended unless radar separation is used. The facility responsible must restrict or suspend IFR traffic for a period of 30 minutes following the applicable time listed in subparagraphs a through e:

- a. The time at which approach clearance was delivered to the pilot.
- b. The EFC time delivered to the pilot.
- c. The arrival time over the NAVAID serving the destination airport.
- d. The current estimate, either the control facility's or the pilot's, whichever is later, at:
 1. The appropriate en route NAVAID or fix, and
 2. The NAVAID serving the destination airport.
- e. The release time and, if issued, the clearance void time.

REFERENCE-

FAA Order JO 7110.65, Para 4-3-4, *Departure Release, Hold for Release, Release Times, Departure Restrictions, and Clearance Void Times.*

10-4-2. LIGHTING REQUIREMENTS

a. **EN ROUTE.** At nontower or non-FSS locations, request the airport management to light all runway lights, approach lights, and all other required airport lighting systems for at least 30 minutes before the ETA of the unreported aircraft until the aircraft has been located or for 30 minutes after its fuel supply is estimated to be exhausted.

b. **TERMINAL.** Operate runway lights, approach lights, and all other required airport lighting systems for at least 30 minutes before the ETA of the unreported aircraft until the aircraft has been located or for 30 minutes after its fuel supply is estimated to be exhausted.

REFERENCE-

FAA Order JO 7110.65, Para 3-4-1, *Emergency Lighting.*

10-4-3. TRAFFIC RESUMPTION

After the 30-minute traffic suspension period has expired, resume normal air traffic control if the operators or pilots of other aircraft concur. This concurrence must be maintained for a period of 30 minutes after the suspension period has expired.

REFERENCE-

FAA Order JO 7110.65, Para 4-3-4, *Departure Release, Hold for Release, Release Times, Departure Restrictions, and Clearance Void Times.*

10-4-4. COMMUNICATIONS FAILURE

Take the following actions, as appropriate, if two-way radio communications are lost with an aircraft:

NOTE-

1. When an IFR aircraft experiences two-way radio communications failure, air traffic control is based on anticipated pilot actions. Pilot procedures and recommended practices are set forth in the AIM, CFRs, and pertinent military regulations.
2. Should the pilot of an aircraft equipped with a coded radar beacon transponder experience a loss of two-way radio capability, the pilot can be expected to adjust the transponder to reply on Mode 3/A **Code 7600**.

a. In the event of lost communications with an aircraft under your control jurisdiction use all appropriate means available to reestablish communications with the aircraft. These may include, but are not limited to,

emergency frequencies, NAVAIDs that are equipped with voice capability, FSS, New York Radio, San Francisco Radio, etc.

NOTE–

1. *New York Radio and San Francisco Radio are operated by Collins Aerospace (formerly ARINC, Incorporated) under contract with the FAA for communications services. These Radio facilities have the capability of relaying information to/from ATC facilities throughout the country.*

2. *Aircraft communications addressing and reporting system (ACARS) or selective calling (SELCAL) may be utilized to reestablish radio communications with suitably equipped aircraft. ACARS can be utilized by contacting San Francisco Radio at (800)–621–0140 or New York Radio at (800) 645–1095. Provide the aircraft call sign, approximate location, and contact instructions. In order to utilize the SELCAL system, the SELCAL code for the subject aircraft must be known. If the SELCAL code is not contained in the remarks section of the flight plan, contact the pertinent air carrier dispatch office to determine the code. Then contact San Francisco Radio (for aircraft over the Pacific, U.S. or Mexico) or New York Radio (for aircraft over the Atlantic, Gulf of Mexico, or Caribbean) and provide the aircraft call sign, SELCAL code, approximate location, and contact instructions.*

b. Broadcast clearances through any available means of communications including the voice feature of NAVAIDs.

NOTE–

1. *Some UHF equipped aircraft have VHF navigation equipment and can receive 121.5 MHz.*

2. *“Any available means” includes the use of FSS and New York Radio or San Francisco Radio.*

REFERENCE–

FAA Order JO 7110.65, Para 4–2–2, Clearance Prefix.

c. Attempt to re-establish communication by having the aircraft use its transponder or make turns to acknowledge clearances and answer questions. Request any of the following in using the transponder:

1. Request the aircraft to reply Mode 3/A “IDENT.”

2. Request the aircraft to reply on Code 7600.

3. Request the aircraft to change to “stand-by” for sufficient time for you to be sure that the lack of a target is the result of the requested action.

PHRASEOLOGY–

REPLY NOT RECEIVED, (appropriate instructions).

(Action) OBSERVED, (additional instructions/information if necessary).

d. Broadcast a clearance for the aircraft to proceed to its filed alternate airport at the MEA if the aircraft operator concurs.

REFERENCE–

FAA Order JO 7110.65, Para 5–2–4, Radio Failure.

FAA Order JO 7110.65, Para 9–2–6, IFR Military Training Routes.

e. If radio communications have not been (re) established with the aircraft after 5 minutes, consider the aircraft’s or pilot’s activity to be suspicious and report it to the OS/CIC per FAA Order JO 7610.4, Chapter 7, Procedures for Handling Suspicious Flight Situations and Hijacked Aircraft, and paragraph 2–1–26f, Supervisory Notification, of this order.

Chapter 13. Decision Support Tools

Section 1. ERAM – En Route

13-1-1. DESCRIPTION

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

NOTE–

For use by the EDST, the current plan is what the En Route Automation System (EAS) predicts an aircraft will fly. This may include clearances that have not yet been issued to the aircraft. Current plans are used to model a flight trajectory and, when applicable, for detecting conflicts.

13-1-2. CONFLICT DETECTION AND RESOLUTION

- a. Actively scan EDST information for predicted aircraft-to-aircraft and aircraft-to-airspace alerts.
- b. When a conflict probe alert is displayed, evaluate the alert and take appropriate action as early as practical, in accordance with duty priorities.
- c. Prioritize the evaluation and resolution of conflict probe alerts to ensure the safe, expeditious, and efficient flow of air traffic.

NOTE–

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

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

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

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

- e. When the Stop Probe feature is activated for an aircraft, conflict probe for that aircraft shall be restarted before transfer of control, unless otherwise coordinated.

NOTE–

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

13-1-3. TRIAL PLANNING

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

- a. Solutions to predicted conflicts.
- b. The feasibility of granting user requests.
- c. The feasibility of removing a flight direction constraint (i.e., inappropriate altitude for direction of flight) for an aircraft.
- d. The feasibility of removing a static restriction for an aircraft.

13-1-4. CONFLICT PROBE-BASED CLEARANCES

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

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

- a. The ACL must be used as the sector team's primary source of flight data.
- b. Actively scan EDST to identify automated notifications that require sector team action.
- c. When an ACL or DL entry has a Remarks indication, the Remarks field of the flight plan must be reviewed. Changes to the Remarks field must also be reviewed.
- d. Highlighting an entry on the ACL or DL must be used to indicate the flight requires an action or special attention.
- e. The Special Posting Area (SPA) should be used to group aircraft that have special significance (e.g., aircraft to be sequenced, air refueling missions, formations).
- f. Sector teams shall post flight progress strips for any nonradar flights.
- g. A flight progress strip shall be posted for any flight plan not contained in the EAS.
- h. Sector teams shall post any flight progress strip(s) that are deemed necessary for safe or efficient operations. The sector team shall comply with all applicable facility directives to maintain posted flight progress strips.
- i. The Drop Track Delete option shall be used in accordance with facility directives.

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

- a. Where automated coordination with a facility is not available (e.g., an international facility, a VFR tower), use the Coordination Menu or a flight progress strip to annotate manual coordination status, in accordance with facility directives.
- b. When the Coordination Menu is used and the flight plan is subsequently changed, remove the yellow coding from the Coordination Indicator after any appropriate action has been taken.

13-1-7. HOLDING

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

13-1-8. RECORDING OF CONTROL DATA

- a. All control information not otherwise recorded via automation recordings or voice recordings must be manually recorded using approved methods.
- b. When a verbal point out has been approved, remove the yellow color coding on the ACL.
- c. When the ACL or DL Free Text Area is used to enter control information, authorized abbreviations must be used. You may use:
 - 1. The clearance abbreviations authorized in TBL 13-1-1.

PILOT/CONTROLLER GLOSSARY

PURPOSE

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

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

c. Terms used in this glossary that apply to flight service station (FSS) roles are included when they differ from air traffic control functions. These terms are followed by "[FSS]."

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

EXPLANATION OF CHANGES

e. Terms Added:

CHART SUPPLEMENT

CHART SUPPLEMENT ALASKA

CHART SUPPLEMENT PACIFIC

f. Terms Modified:

AERONAUTICAL INFORMATION PUBLICATION (AIP)

AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER (ATCSCC)

ALPHANUMERIC DISPLAY

ALTITUDE READOUT

AUTOMATED UNICOM

CHART SUPPLEMENT U.S.

NAVAID CLASSES

PRECIPITATION RADAR WEATHER DESCRIPTIONS

SAFETY LOGIC SYSTEM ALERTS

TERMINAL VFR RADAR SERVICE

TIE-IN FACILITY

UNICOM

VOT

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

ADS [ICAO]–

(See ICAO term AUTOMATIC DEPENDENT SURVEILLANCE.)

ADS–B–

(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST.)

ADS–C–

(See AUTOMATIC DEPENDENT SURVEILLANCE–CONTRACT.)

ADVANCED AIR MOBILITY (AAM)–A transportation system that transports people and property by air between two points in the NAS using aircraft with advanced technologies, including electric aircraft or electric vertical takeoff and landing aircraft, in both controlled and uncontrolled airspace.

ADVISE INTENTIONS– Tell me what you plan to do.

ADVISORY– Advice and information provided to assist pilots in the safe conduct of flight and aircraft movement.

(See ADVISORY SERVICE.)

ADVISORY CIRCULAR (AC)– An FAA publication, advisory and descriptive in nature, which is not regulatory.

ADVISORY FREQUENCY– The appropriate frequency to be used for Airport Advisory Service.

(See LOCAL AIRPORT ADVISORY.)

(See UNICOM.)

(Refer to ADVISORY CIRCULAR NO. 90-66.)

(Refer to AIM.)

ADVISORY SERVICE– Advice and information provided by a facility to assist pilots in the safe conduct of flight and aircraft movement.

(See ADDITIONAL SERVICES.)

(See LOCAL AIRPORT ADVISORY.)

(See RADAR ADVISORY.)

(See SAFETY ALERT.)

(See TRAFFIC ADVISORIES.)

(Refer to AIM.)

ADW–

(See ARRIVAL DEPARTURE WINDOW)

AERIAL REFUELING– A procedure used by the military to transfer fuel from one aircraft to another during flight.

(Refer to VFR/IFR Wall Planning Charts.)

AERODROME– A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure, and movement of aircraft.

AERODROME BEACON [ICAO]– Aeronautical beacon used to indicate the location of an aerodrome from the air.

AERODROME CONTROL SERVICE [ICAO]– Air traffic control service for aerodrome traffic.

AERODROME CONTROL TOWER [ICAO]– A unit established to provide air traffic control service to aerodrome traffic.

AERODROME ELEVATION [ICAO]– The elevation of the highest point of the landing area.

AERODROME TRAFFIC CIRCUIT [ICAO]– The specified path to be flown by aircraft operating in the vicinity of an aerodrome.

AERONAUTICAL BEACON– A visual NAVAID displaying flashes of white and/or colored light to indicate the location of an airport, a heliport, a landmark, a certain point of a Federal airway in mountainous terrain, or an obstruction.

(See AIRPORT ROTATING BEACON.)

(Refer to AIM.)

AERONAUTICAL CHART– A map used in air navigation containing all or part of the following: topographic features, hazards and obstructions, navigation aids, navigation routes, designated airspace, and airports. Commonly used aeronautical charts are:

a. Sectional Aeronautical Charts (1:500,000)– Designed for visual navigation of slow or medium speed aircraft. Topographic information on these charts features the portrayal of relief and a judicious selection of visual check points for VFR flight. Aeronautical information includes visual and radio aids to navigation, airports, controlled airspace, permanent special use airspace (SUA), obstructions, and related data.

b. VFR Terminal Area Charts (1:250,000)– Depict Class B airspace which provides for the control or segregation of all the aircraft within Class B airspace. The chart depicts topographic information and aeronautical information which includes visual and radio aids to navigation, airports, controlled airspace, permanent SUA, obstructions, and related data.

c. En Route Low Altitude Charts– Provide aeronautical information for en route instrument navigation (IFR) in the low altitude stratum. Information includes the portrayal of airways, limits of controlled airspace, position identification and frequencies of radio aids, selected airports, minimum en route and minimum obstruction clearance altitudes, airway distances, reporting points, permanent SUA, and related data. Area charts, which are a part of this series, furnish terminal data at a larger scale in congested areas.

d. En Route High Altitude Charts– Provide aeronautical information for en route instrument navigation (IFR) in the high altitude stratum. Information includes the portrayal of jet routes, identification and frequencies of radio aids, selected airports, distances, time zones, special use airspace, and related information.

e. Instrument Approach Procedure (IAP) Charts– Portray the aeronautical data which is required to execute an instrument approach to an airport. These charts depict the procedures, including all related data, and the airport diagram. Each procedure is designated for use with a specific type of electronic navigation system including NDB, TACAN, VOR, ILS RNAV and GLS. These charts are identified by the type of navigational aid(s)/equipment required to provide final approach guidance.

f. Instrument Departure Procedure (DP) Charts– Designed to expedite clearance delivery and to facilitate transition between takeoff and en route operations. Each DP is presented as a separate chart and may serve a single airport or more than one airport in a given geographical location.

g. Standard Terminal Arrival (STAR) Charts– Designed to expedite air traffic control arrival procedures and to facilitate transition between en route and instrument approach operations. Each STAR procedure is presented as a separate chart and may serve a single airport or more than one airport in a given geographical location.

h. Airport Taxi Charts– Designed to expedite the efficient and safe flow of ground traffic at an airport. These charts are identified by the official airport name; e.g., Ronald Reagan Washington National Airport.

(See ICAO term AERONAUTICAL CHART.)

AERONAUTICAL CHART [ICAO]– A representation of a portion of the earth, its culture and relief, specifically designated to meet the requirements of air navigation.

AERONAUTICAL INFORMATION MANUAL (AIM)– A primary FAA publication whose purpose is to instruct airmen about operating in the National Airspace System of the U.S. It provides basic flight information, ATC Procedures and general instructional information concerning health, medical facts, factors affecting flight safety, accident and hazard reporting, and types of aeronautical charts and their use.

AERONAUTICAL INFORMATION PUBLICATION (AIP) [ICAO]– A publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation.

(See CHART SUPPLEMENT.)

AERONAUTICAL INFORMATION SERVICES (AIS)– A facility in Silver Spring, MD, established by FAA to operate a central aeronautical information service for the collection, validation, and dissemination of

orderly, and expeditious flow of traffic while minimizing delays. The following functions are located at the ATCSCC:

a. Central Altitude Reservation Function (CARF). Responsible for coordinating, planning, and approving special user requirements under the Altitude Reservation (ALTRV) concept.

(See ALTITUDE RESERVATION.)

b. Airport Reservation Office (ARO). Monitors the operation and allocation of reservations for unscheduled operations at airports designated by the Administrator as High Density Airports. These airports are generally known as slot controlled airports. The ARO allocates reservations on a first come, first served basis determined by the time the request is received at the ARO.

(Refer to 14 CFR Part 93.)

(See CHART SUPPLEMENT.)

c. U.S. Notice to Air Missions (NOTAM) Office. Responsible for collecting, maintaining, and distributing NOTAMs for the U.S. civilian and military, as well as international aviation communities.

(See NOTICE TO AIR MISSIONS.)

d. Weather Unit. Monitor all aspects of weather for the U.S. that might affect aviation including cloud cover, visibility, winds, precipitation, thunderstorms, icing, turbulence, and more. Provide forecasts based on observations and on discussions with meteorologists from various National Weather Service offices, FAA facilities, airlines, and private weather services.

e. Air Traffic Organization (ATO) Space Operations and Unmanned Aircraft System (UAS); the Office of Primary Responsibility (OPR) for all space and upper class E tactical operations in the National Airspace System (NAS).

AIR TRAFFIC SERVICE– A generic term meaning:

- a. Flight Information Service.**
- b. Alerting Service.**
- c. Air Traffic Advisory Service.**
- d. Air Traffic Control Service:**
 - 1. Area Control Service,**
 - 2. Approach Control Service, or**
 - 3. Airport Control Service.**

AIR TRAFFIC ORGANIZATION (ATO) – The FAA line of business responsible for providing safe and efficient air navigation services in the national airspace system.

AIR TRAFFIC SERVICE (ATS) ROUTES – The term “ATS Route” is a generic term that includes “VOR Federal airways,” “colored Federal airways,” “jet routes,” and “RNAV routes.” The term “ATS route” does not replace these more familiar route names, but serves only as an overall title when listing the types of routes that comprise the United States route structure.

AIRBORNE– An aircraft is considered airborne when all parts of the aircraft are off the ground.

AIRBORNE DELAY– Amount of delay to be encountered in airborne holding.

AIRBORNE REROUTE (ABRR)– A capability within the Traffic Flow Management System used for the timely development and implementation of tactical reroutes for airborne aircraft. This capability defines a set of aircraft-specific reroutes that address a certain traffic flow problem and then electronically transmits them to En Route Automation Modernization (ERAM) for execution by the appropriate sector controllers.

AIRCRAFT– Device(s) that are used or intended to be used for flight in the air, and when used in air traffic control terminology, may include the flight crew.

(See ICAO term AIRCRAFT.)

AIRCRAFT [ICAO]– Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth’s surface.

AIRCRAFT APPROACH CATEGORY– A grouping of aircraft based on a speed of 1.3 times the stall speed in the landing configuration at maximum gross landing weight. An aircraft must fit in only one category. If it is necessary to maneuver at speeds in excess of the upper limit of a speed range for a category, the minimums for the category for that speed must be used. For example, an aircraft which falls in Category A, but is circling to land at a speed in excess of 91 knots, must use the approach Category B minimums when circling to land. The categories are as follows:

- a. Category A– Speed less than 91 knots.
 - b. Category B– Speed 91 knots or more but less than 121 knots.
 - c. Category C– Speed 121 knots or more but less than 141 knots.
 - d. Category D– Speed 141 knots or more but less than 166 knots.
 - e. Category E– Speed 166 knots or more.
- (Refer to 14 CFR Part 97.)

AIRCRAFT CLASSES– For the purposes of Wake Turbulence Separation Minima, ATC classifies aircraft as Super, Heavy, Large, and Small as follows:

- a. Super. The Airbus A-380-800 (A388) and the Antonov An-225 (A225) are classified as super.
 - b. Heavy– Aircraft capable of takeoff weights of 300,000 pounds or more whether or not they are operating at this weight during a particular phase of flight.
 - c. Large– Aircraft of more than 41,000 pounds, maximum certificated takeoff weight, up to but not including 300,000 pounds.
 - d. Small– Aircraft of 41,000 pounds or less maximum certificated takeoff weight.
- (Refer to AIM.)

AIRCRAFT CONFLICT– Predicted conflict, within EDST of two aircraft, or between aircraft and airspace. A Red alert is used for conflicts when the predicted minimum separation is 5 nautical miles or less. A Yellow alert is used when the predicted minimum separation is between 5 and approximately 12 nautical miles. A Blue alert is used for conflicts between an aircraft and predefined airspace.

(See EN ROUTE DECISION SUPPORT TOOL.)

AIRCRAFT LIST (ACL)– A view available with EDST that lists aircraft currently in or predicted to be in a particular sector's airspace. The view contains textual flight data information in line format and may be sorted into various orders based on the specific needs of the sector team.

(See EN ROUTE DECISION SUPPORT TOOL.)

AIRCRAFT SURGE LAUNCH AND RECOVERY– Procedures used at USAF bases to provide increased launch and recovery rates in instrument flight rules conditions. ASLAR is based on:

- a. Reduced separation between aircraft which is based on time or distance. Standard arrival separation applies between participants including multiple flights until the DRAG point. The DRAG point is a published location on an ASLAR approach where aircraft landing second in a formation slows to a predetermined airspeed. The DRAG point is the reference point at which MARSA applies as expanding elements effect separation within a flight or between subsequent participating flights.
- b. ASLAR procedures shall be covered in a Letter of Agreement between the responsible USAF military ATC facility and the concerned Federal Aviation Administration facility. Initial Approach Fix spacing requirements are normally addressed as a minimum.

AIRCRAFT HAZARD AREA (AHA)– Used by ATC to segregate air traffic from a launch vehicle, reentry vehicle, amateur rocket, jettisoned stages, hardware, or falling debris generated by failures associated with any of these activities. An AHA is designated via NOTAM as either a TFR or stationary ALTRV. Unless otherwise specified, the vertical limits of an AHA are from the surface to unlimited.

(See CONTINGENCY HAZARD AREA.)

(See REFINED HAZARD AREA.)

(See TRANSITIONAL HAZARD AREA.)

AIRPORT RESERVATION OFFICE– Office responsible for monitoring the operation of slot controlled airports. It receives and processes requests for unscheduled operations at slot controlled airports.

AIRPORT ROTATING BEACON– A visual NAVAID operated at many airports. At civil airports, alternating white and green flashes indicate the location of the airport. At military airports, the beacons flash alternately white and green, but are differentiated from civil beacons by dualpeaked (two quick) white flashes between the green flashes.

(See INSTRUMENT FLIGHT RULES.)

(See SPECIAL VFR OPERATIONS.)

(See ICAO term AERODROME BEACON.)

(Refer to AIM.)

AIRPORT SURFACE DETECTION EQUIPMENT (ASDE)– Surveillance equipment specifically designed to detect aircraft, vehicular traffic, and other objects, on the surface of an airport, and to present the image on a tower display. Used to augment visual observation by tower personnel of aircraft and/or vehicular movements on runways and taxiways. There are three ASDE systems deployed in the NAS:

a. ASDE-3– a Surface Movement Radar.

b. ASDE-X– a system that uses an X-band Surface Movement Radar, multilateration, and ADS-B.

c. Airport Surface Surveillance Capability (ASSC)– A system that uses Surface Movement Radar, multilateration, and ADS-B.

AIRPORT SURVEILLANCE RADAR– Approach control radar used to detect and display an aircraft's position in the terminal area. ASR provides range and azimuth information but does not provide elevation data. Coverage of the ASR can extend up to 60 miles.

AIRPORT TAXI CHARTS–

(See AERONAUTICAL CHART.)

AIRPORT TRAFFIC CONTROL SERVICE– A service provided by a control tower for aircraft operating on the movement area and in the vicinity of an airport.

(See MOVEMENT AREA.)

(See TOWER.)

(See ICAO term AERODROME CONTROL SERVICE.)

AIRPORT TRAFFIC CONTROL TOWER–

(See TOWER.)

AIRSPACE CONFLICT– Predicted conflict of an aircraft and active Special Activity Airspace (SAA).

AIRSPACE FLOW PROGRAM (AFP)– AFP is a Traffic Management (TM) process administered by the Air Traffic Control System Command Center (ATCSCC) where aircraft are assigned an Expected Departure Clearance Time (EDCT) in order to manage capacity and demand for a specific area of the National Airspace System (NAS). The purpose of the program is to mitigate the effects of en route constraints. It is a flexible program and may be implemented in various forms depending upon the needs of the air traffic system.

AIRSPACE HIERARCHY– Within the airspace classes, there is a hierarchy and, in the event of an overlap of airspace: Class A preempts Class B, Class B preempts Class C, Class C preempts Class D, Class D preempts Class E, and Class E preempts Class G.

AIRSPEED– The speed of an aircraft relative to its surrounding air mass. The unqualified term “airspeed” means one of the following:

a. Indicated Airspeed– The speed shown on the aircraft airspeed indicator. This is the speed used in pilot/controller communications under the general term “airspeed.”

(Refer to 14 CFR Part 1.)

b. True Airspeed– The airspeed of an aircraft relative to undisturbed air. Used primarily in flight planning and en route portion of flight. When used in pilot/controller communications, it is referred to as “true airspeed” and not shortened to “airspeed.”

AIRSPACE RESERVATION– The term used in oceanic ATC for airspace utilization under prescribed conditions normally employed for the mass movement of aircraft or other special user requirements which cannot otherwise be accomplished. Airspace reservations must be classified as either “moving” or “stationary.”

(See MOVING AIRSPACE RESERVATION)

(See STATIONARY AIRSPACE RESERVATION.)

(See ALTITUDE RESERVATION.)

AIRSTART– The starting of an aircraft engine while the aircraft is airborne, preceded by engine shutdown during training flights or by actual engine failure.

AIRWAY– A Class E airspace area established in the form of a corridor, the centerline of which is defined by radio navigational aids.

(See FEDERAL AIRWAYS.)

(See ICAO term AIRWAY.)

(Refer to 14 CFR Part 71.)

(Refer to AIM.)

AIRWAY [ICAO]– A control area or portion thereof established in the form of corridor equipped with radio navigational aids.

AIRWAY BEACON– Used to mark airway segments in remote mountain areas. The light flashes Morse Code to identify the beacon site.

(Refer to AIM.)

AIS–

(See AERONAUTICAL INFORMATION SERVICES.)

AIT–

(See AUTOMATED INFORMATION TRANSFER.)

ALERFA (Alert Phase) [ICAO]– A situation wherein apprehension exists as to the safety of an aircraft and its occupants.

ALERT– A notification to a position that there is an aircraft-to-aircraft or aircraft-to-airspace conflict, as detected by Automated Problem Detection (APD).

ALERT AREA–

(See SPECIAL USE AIRSPACE.)

ALERT NOTICE (ALNOT)– A request originated by a flight service station (FSS) or an air route traffic control center (ARTCC) for an extensive communication search for overdue, unreported, or missing aircraft.

ALERTING SERVICE– A service provided to notify appropriate organizations regarding aircraft in need of search and rescue aid and assist such organizations as required.

ALNOT–

(See ALERT NOTICE.)

ALONG-TRACK DISTANCE (ATD)– The horizontal distance between the aircraft’s current position and a fix measured by an area navigation system that is not subject to slant range errors.

ALPHANUMERIC DISPLAY– Letters and numerals used to show identification, altitude, beacon code, and other information concerning a target on a radar display.

ALTERNATE AERODROME [ICAO]– An aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome of intended landing.

Note: The aerodrome from which a flight departs may also be an en-route or a destination alternate aerodrome for the flight.

ALTERNATE AIRPORT– An airport at which an aircraft may land if a landing at the intended airport becomes inadvisable.

(See ICAO term ALTERNATE AERODROME.)

ALTIMETER SETTING– The barometric pressure reading used to adjust a pressure altimeter for variations in existing atmospheric pressure or to the standard altimeter setting (29.92).

(Refer to 14 CFR Part 91.)

(Refer to AIM.)

ALTITUDE– The height of a level, point, or object measured in feet Above Ground Level (AGL) or from Mean Sea Level (MSL).

(See FLIGHT LEVEL.)

a. **MSL Altitude**– Altitude expressed in feet measured from mean sea level.

b. **AGL Altitude**– Altitude expressed in feet measured above ground level.

c. **Indicated Altitude**– The altitude as shown by an altimeter. On a pressure or barometric altimeter it is altitude as shown uncorrected for instrument error and uncompensated for variation from standard atmospheric conditions.

(See ICAO term ALTITUDE.)

ALTITUDE [ICAO]– The vertical distance of a level, a point or an object considered as a point, measured from mean sea level (MSL).

ALTITUDE READOUT– An aircraft's altitude, transmitted via the Mode C transponder feature, that is visually displayed in 100-foot increments on a radar scope having readout capability.

(See ALPHANUMERIC DISPLAY.)

(Refer to AIM.)

ALTITUDE RESERVATION (ALTRV)– Airspace utilization under prescribed conditions normally employed for the mass movement of aircraft or other special user requirements which cannot otherwise be accomplished. ALTRVs are approved by the appropriate FAA facility. ALTRVs must be classified as either “moving” or “stationary.”

(See MOVING ALTITUDE RESERVATION.)

(See STATIONARY ALTITUDE RESERVATION.)

(See AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER.)

ALTITUDE RESTRICTION– An altitude or altitudes, stated in the order flown, which are to be maintained until reaching a specific point or time. Altitude restrictions may be issued by ATC due to traffic, terrain, or other airspace considerations.

ALTITUDE RESTRICTIONS ARE CANCELED– Adherence to previously imposed altitude restrictions is no longer required during a climb or descent.

ALTRV–

(See ALTITUDE RESERVATION.)

AMVER–

(See AUTOMATED MUTUAL-ASSISTANCE VESSEL RESCUE SYSTEM.)

APB–

(See AUTOMATED PROBLEM DETECTION BOUNDARY.)

APD–

(See AUTOMATED PROBLEM DETECTION.)

APDIA–

(See AUTOMATED PROBLEM DETECTION INHIBITED AREA.)

APPROACH CLEARANCE– Authorization by ATC for a pilot to conduct an instrument approach. The type of instrument approach for which a clearance and other pertinent information is provided in the approach clearance when required.

(See CLEARED APPROACH.)

(See INSTRUMENT APPROACH PROCEDURE.)

(Refer to AIM.)

(Refer to 14 CFR Part 91.)

APPROACH CONTROL FACILITY– A terminal ATC facility that provides approach control service in a terminal area.

(See **APPROACH CONTROL SERVICE**.)

(See **RADAR APPROACH CONTROL FACILITY**.)

APPROACH CONTROL SERVICE– Air traffic control service provided by an approach control facility for arriving and departing VFR/IFR aircraft and, on occasion, en route aircraft. At some airports not served by an approach control facility, the ARTCC provides limited approach control service.

(See ICAO term **APPROACH CONTROL SERVICE**.)

(Refer to AIM.)

APPROACH CONTROL SERVICE [ICAO]– Air traffic control service for arriving or departing controlled flights.

APPROACH GATE– An imaginary point used within ATC as a basis for vectoring aircraft to the final approach course. The gate will be established along the final approach course 1 mile from the final approach fix on the side away from the airport and will be no closer than 5 miles from the landing threshold.

APPROACH/DEPARTURE HOLD AREA– The locations on taxiways in the approach or departure areas of a runway designated to protect landing or departing aircraft. These locations are identified by signs and markings.

APPROACH LIGHT SYSTEM–

(See **AIRPORT LIGHTING**.)

APPROACH SEQUENCE– The order in which aircraft are positioned while on approach or awaiting approach clearance.

(See **LANDING SEQUENCE**.)

(See ICAO term **APPROACH SEQUENCE**.)

APPROACH SEQUENCE [ICAO]– The order in which two or more aircraft are cleared to approach to land at the aerodrome.

APPROACH SPEED– The recommended speed contained in aircraft manuals used by pilots when making an approach to landing. This speed will vary for different segments of an approach as well as for aircraft weight and configuration.

APPROACH WITH VERTICAL GUIDANCE (APV)– A term used to describe RNAV approach procedures that provide lateral and vertical guidance but do not meet the requirements to be considered a precision approach.

APPROPRIATE ATS AUTHORITY [ICAO]– The relevant authority designated by the State responsible for providing air traffic services in the airspace concerned. In the United States, the “appropriate ATS authority” is the Program Director for Air Traffic Planning and Procedures, ATP-1.

APPROPRIATE AUTHORITY–

- a. Regarding flight over the high seas: the relevant authority is the State of Registry.
- b. Regarding flight over other than the high seas: the relevant authority is the State having sovereignty over the territory being overflown.

APPROPRIATE OBSTACLE CLEARANCE MINIMUM ALTITUDE– Any of the following:

(See **MINIMUM EN ROUTE IFR ALTITUDE**.)

(See **MINIMUM IFR ALTITUDE**.)

(See **MINIMUM OBSTRUCTION CLEARANCE ALTITUDE**.)

(See **MINIMUM VECTORING ALTITUDE**.)

APPROPRIATE TERRAIN CLEARANCE MINIMUM ALTITUDE– Any of the following:

(See **MINIMUM EN ROUTE IFR ALTITUDE**.)

(See **MINIMUM IFR ALTITUDE**.)

(See **MINIMUM OBSTRUCTION CLEARANCE ALTITUDE**.)

(See **MINIMUM VECTORING ALTITUDE**.)

APRON– A defined area on an airport or heliport intended to accommodate aircraft for purposes of loading or unloading passengers or cargo, refueling, parking, or maintenance. With regard to seaplanes, a ramp is used for access to the apron from the water.

(See ICAO term APRON.)

APRON [ICAO]– A defined area, on a land aerodrome, intended to accommodate aircraft for purposes of loading or unloading passengers, mail or cargo, refueling, parking or maintenance.

ARC– The track over the ground of an aircraft flying at a constant distance from a navigational aid by reference to distance measuring equipment (DME).

AREA CONTROL CENTER [ICAO]– An air traffic control facility primarily responsible for ATC services being provided IFR aircraft during the en route phase of flight. The U.S. equivalent facility is an air route traffic control center (ARTCC).

AREA NAVIGATION (RNAV)– A method of navigation which permits aircraft operation on any desired flight path within the coverage of ground– or space–based navigation aids or within the limits of the capability of self-contained aids, or a combination of these.

Note: Area navigation includes performance–based navigation as well as other operations that do not meet the definition of performance–based navigation.

AREA NAVIGATION (RNAV) APPROACH CONFIGURATION:

a. STANDARD T– An RNAV approach whose design allows direct flight to any one of three initial approach fixes (IAF) and eliminates the need for procedure turns. The standard design is to align the procedure on the extended centerline with the missed approach point (MAP) at the runway threshold, the final approach fix (FAF), and the initial approach/intermediate fix (IAF/IF). The other two IAFs will be established perpendicular to the IF.

b. MODIFIED T– An RNAV approach design for single or multiple runways where terrain or operational constraints do not allow for the standard T. The “T” may be modified by increasing or decreasing the angle from the corner IAF(s) to the IF or by eliminating one or both corner IAFs.

c. STANDARD I– An RNAV approach design for a single runway with both corner IAFs eliminated. Course reversal or radar vectoring may be required at busy terminals with multiple runways.

d. TERMINAL ARRIVAL AREA (TAA)– The TAA is controlled airspace established in conjunction with the Standard or Modified T and I RNAV approach configurations. In the standard TAA, there are three areas: straight-in, left base, and right base. The arc boundaries of the three areas of the TAA are published portions of the approach and allow aircraft to transition from the en route structure direct to the nearest IAF. TAAs will also eliminate or reduce feeder routes, departure extensions, and procedure turns or course reversal.

1. STRAIGHT-IN AREA– A 30 NM arc centered on the IF bounded by a straight line extending through the IF perpendicular to the intermediate course.

2. LEFT BASE AREA– A 30 NM arc centered on the right corner IAF. The area shares a boundary with the straight-in area except that it extends out for 30 NM from the IAF and is bounded on the other side by a line extending from the IF through the FAF to the arc.

3. RIGHT BASE AREA– A 30 NM arc centered on the left corner IAF. The area shares a boundary with the straight-in area except that it extends out for 30 NM from the IAF and is bounded on the other side by a line extending from the IF through the FAF to the arc.

AREA NAVIGATION (RNAV) GLOBAL POSITIONING SYSTEM (GPS) PRECISION RUNWAY MONITORING (PRM) APPROACH–

A GPS approach, which requires vertical guidance, used in lieu of another type of PRM approach to conduct approaches to parallel runways whose extended centerlines are separated by less than 4,300 feet and at least 3,000 feet, where simultaneous close parallel approaches are permitted. Also used in lieu of an ILS PRM and/or LDA PRM approach to conduct Simultaneous Offset Instrument Approach (SOIA) operations.

ARMY AVIATION FLIGHT INFORMATION BULLETIN– A bulletin that provides air operation data covering Army, National Guard, and Army Reserve aviation activities.

ARO–

(See AIRPORT RESERVATION OFFICE.)

ARRESTING SYSTEM– A safety device consisting of two major components, namely, engaging or catching devices and energy absorption devices for the purpose of arresting both tailhook and/or nontailhook-equipped aircraft. It is used to prevent aircraft from overrunning runways when the aircraft cannot be stopped after landing or during aborted takeoff. Arresting systems have various names; e.g., arresting gear, hook device, wire barrier cable.

(See ABORT.)

(Refer to AIM.)

ARRIVAL CENTER– The ARTCC having jurisdiction for the impacted airport.

ARRIVAL DELAY– A parameter which specifies a period of time in which no aircraft will be metered for arrival at the specified airport.

ARRIVAL/DEPARTURE WINDOW (ADW)– A depiction presented on an air traffic control display, used by the controller to prevent possible conflicts between arrivals to, and departures from, a runway. The ADW identifies that point on the final approach course by which a departing aircraft must have begun takeoff.

ARRIVAL SECTOR (En Route)– An operational control sector containing one or more meter fixes on or near the TRACON boundary.

ARRIVAL TIME– The time an aircraft touches down on arrival.

ARSR–

(See AIR ROUTE SURVEILLANCE RADAR.)

ARTCC–

(See AIR ROUTE TRAFFIC CONTROL CENTER.)

ASDA–

(See ACCELERATE-STOP DISTANCE AVAILABLE.)

ASDA [ICAO]–

(See ICAO Term ACCELERATE-STOP DISTANCE AVAILABLE.)

ASDE–

(See AIRPORT SURFACE DETECTION EQUIPMENT.)

ASLAR–

(See AIRCRAFT SURGE LAUNCH AND RECOVERY.)

ASR–

(See AIRPORT SURVEILLANCE RADAR.)

ASR APPROACH–

(See SURVEILLANCE APPROACH.)

ASSOCIATED– A radar target displaying a data block with flight identification and altitude information.

(See UNASSOCIATED.)

ATC–

(See AIR TRAFFIC CONTROL.)

ATC ADVISES– Used to prefix a message of noncontrol information when it is relayed to an aircraft by other than an air traffic controller.

(See ADVISORY.)

ATC ASSIGNED AIRSPACE– Airspace of defined vertical/lateral limits, assigned by ATC, for the purpose of providing air traffic segregation between the specified activities being conducted within the assigned airspace and other IFR air traffic.

(See SPECIAL USE AIRSPACE.)

ATC CLEARANCE–

(See AIR TRAFFIC CLEARANCE.)

ATC CLEARS– Used to prefix an ATC clearance when it is relayed to an aircraft by other than an air traffic controller.

ATC INSTRUCTIONS– Directives issued by air traffic control for the purpose of requiring a pilot to take specific actions; e.g., “Turn left heading two five zero,” “Go around,” “Clear the runway.”

(Refer to 14 CFR Part 91.)

ATC PREFERRED ROUTE NOTIFICATION– EDST notification to the appropriate controller of the need to determine if an ATC preferred route needs to be applied, based on destination airport.

(See ROUTE ACTION NOTIFICATION.)

(See EN ROUTE DECISION SUPPORT TOOL.)

ATC PREFERRED ROUTES– Preferred routes that are not automatically applied by Host.

ATC REQUESTS– Used to prefix an ATC request when it is relayed to an aircraft by other than an air traffic controller.

ATC SECURITY SERVICES– Communications and security tracking provided by an ATC facility in support of the DHS, the DoD, or other Federal security elements in the interest of national security. Such security services are only applicable within designated areas. ATC security services do not include ATC basic radar services or flight following.

ATC SECURITY SERVICES POSITION– The position responsible for providing ATC security services as defined. This position does not provide ATC, IFR separation, or VFR flight following services, but is responsible for providing security services in an area comprising airspace assigned to one or more ATC operating sectors. This position may be combined with control positions.

ATC SECURITY TRACKING– The continuous tracking of aircraft movement by an ATC facility in support of the DHS, the DoD, or other security elements for national security using radar (i.e., radar tracking) or other means (e.g., manual tracking) without providing basic radar services (including traffic advisories) or other ATC services not defined in this section.

ATS SURVEILLANCE SERVICE [ICAO]– A term used to indicate a service provided directly by means of an ATS surveillance system.

ATC SURVEILLANCE SOURCE– Used by ATC for establishing identification, control and separation using a target depicted on an air traffic control facility’s video display that has met the relevant safety standards for operational use and received from one, or a combination, of the following surveillance sources:

- a. Radar (See RADAR.)
 - b. ADS-B (See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST.)
 - c. WAM (See WIDE AREA MULTILATERATION.)
- (See INTERROGATOR.)
(See TRANSPONDER.)
(See ICAO term RADAR.)
(Refer to AIM.)

ATS SURVEILLANCE SYSTEM [ICAO]– A generic term meaning variously, ADS-B, PSR, SSR or any comparable ground-based system that enables the identification of aircraft.

Note: A comparable ground-based system is one that has been demonstrated, by comparative assessment or other methodology, to have a level of safety and performance equal to or better than monopulse SSR.

ATCAA–

(See ATC ASSIGNED AIRSPACE.)

ATCRBS–

(See RADAR.)

ATCSCC–

(See AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER.)

ATCT–

(See TOWER.)

ATD–

(See ALONG–TRACK DISTANCE.)

ATIS–

(See AUTOMATIC TERMINAL INFORMATION SERVICE.)

ATIS [ICAO]–

(See ICAO Term AUTOMATIC TERMINAL INFORMATION SERVICE.)

ATO–

(See AIR TRAFFIC ORGANIZATION.)

ATPA–

(See AUTOMATED TERMINAL PROXIMITY ALERT.)

ATS ROUTE [ICAO]– A specified route designed for channeling the flow of traffic as necessary for the provision of air traffic services.

Note: The term “ATS Route” is used to mean variously, airway, advisory route, controlled or uncontrolled route, arrival or departure, etc.

ATTENTION ALL USERS PAGE (AAUP)– The AAUP provides the pilot with additional information relative to conducting a specific operation, for example, PRM approaches and RNAV departures.

AUTOLAND APPROACH–An autoland system aids by providing control of aircraft systems during a precision instrument approach to at least decision altitude and possibly all the way to touchdown, as well as in some cases, through the landing rollout. The autoland system is a sub-system of the autopilot system from which control surface management occurs. The aircraft autopilot sends instructions to the autoland system and monitors the autoland system performance and integrity during its execution.

AUTOMATED EMERGENCY DESCENT–

(See EMERGENCY DESCENT MODE.)

AUTOMATED INFORMATION TRANSFER (AIT)– A precoordinated process, specifically defined in facility directives, during which a transfer of altitude control and/or radar identification is accomplished without verbal coordination between controllers using information communicated in a full data block.

AUTOMATED MUTUAL-ASSISTANCE VESSEL RESCUE SYSTEM– A facility which can deliver, in a matter of minutes, a surface picture (SURPIC) of vessels in the area of a potential or actual search and rescue incident, including their predicted positions and their characteristics.

(See FAA Order JO 7110.65, Para 10–6–4, INFLIGHT CONTINGENCIES.)

AUTOMATED PROBLEM DETECTION (APD)– An Automation Processing capability that compares trajectories in order to predict conflicts.

AUTOMATED PROBLEM DETECTION BOUNDARY (APB)– The adapted distance beyond a facilities boundary defining the airspace within which EDST performs conflict detection.

(See EN ROUTE DECISION SUPPORT TOOL.)

AUTOMATED PROBLEM DETECTION INHIBITED AREA (APDIA)– Airspace surrounding a terminal area within which APD is inhibited for all flights within that airspace.

AUTOMATED SERVICES–Services delivered via an automated system (that is, without human interaction). For example, flight plans, Notices to Air Missions (NOTAM), interactive maps, computer-generated text-to-speech messages, short message service, or email.

AUTOMATED TERMINAL PROXIMITY ALERT (ATPA)– Monitors the separation of aircraft on the Final Approach Course (FAC), displaying a graphical notification (cone and/or mileage) when a potential loss of separation is detected. The warning cone (Yellow) will display at 45 seconds and the alert cone (Red) will display at 24 seconds prior to predicted loss of separation. Current distance between two aircraft on final will be displayed in line 3 of the full data block of the trailing aircraft in corresponding colors.

AUTOMATED WEATHER SYSTEM– Any of the automated weather sensor platforms that collect weather data at airports and disseminate the weather information via radio and/or landline. The systems currently consist of the Automated Surface Observing System (ASOS) and Automated Weather Observation System (AWOS).

AUTOMATED UNICOM– Provides completely automated weather, radio check capability and airport advisory information on an Automated UNICOM system. These systems offer a variety of features, typically selectable by microphone clicks, on the UNICOM frequency. Availability will be published in the Chart Supplement and approach charts.

AUTOMATIC ALTITUDE REPORT–
(See ALTITUDE READOUT.)

AUTOMATIC ALTITUDE REPORTING– That function of a transponder which responds to Mode C interrogations by transmitting the aircraft's altitude in 100-foot increments.

AUTOMATIC CARRIER LANDING SYSTEM– U.S. Navy final approach equipment consisting of precision tracking radar coupled to a computer data link to provide continuous information to the aircraft, monitoring capability to the pilot, and a backup approach system.

AUTOMATIC DEPENDENT SURVEILLANCE (ADS) [ICAO]– A surveillance technique in which aircraft automatically provide, via a data link, data derived from on-board navigation and position fixing systems, including aircraft identification, four dimensional position and additional data as appropriate.

AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST (ADS-B)– A surveillance system in which an aircraft or vehicle to be detected is fitted with cooperative equipment in the form of a data link transmitter. The aircraft or vehicle periodically broadcasts its GNSS-derived position and other required information such as identity and velocity, which is then received by a ground-based or space-based receiver for processing and display at an air traffic control facility, as well as by suitably equipped aircraft.

(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST IN.)

(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST OUT.)

(See COOPERATIVE SURVEILLANCE.)

(See GLOBAL POSITIONING SYSTEM.)

(See SPACE–BASED ADS–B.)

AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST IN (ADS–B In)– Aircraft avionics capable of receiving ADS–B Out transmissions directly from other aircraft, as well as traffic or weather information transmitted from ground stations.

(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST OUT.)

(See AUTOMATIC DEPENDENT SURVEILLANCE–REBROADCAST.)

(See FLIGHT INFORMATION SERVICE–BROADCAST.)

(See TRAFFIC INFORMATION SERVICE–BROADCAST.)

AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST OUT (ADS–B Out)– The transmitter onboard an aircraft or ground vehicle that periodically broadcasts its GNSS-derived position along with other required information, such as identity, altitude, and velocity.

(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST.)

(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST IN.)

AUTOMATIC DEPENDENT SURVEILLANCE–CONTRACT (ADS–C)– A data link position reporting system, controlled by a ground station, that establishes contracts with an aircraft's avionics that occur automatically whenever specific events occur, or specific time intervals are reached.

AUTOMATIC DEPENDENT SURVEILLANCE- REBROADCAST (ADS-R)– A datalink translation function of the ADS-B ground system required to accommodate the two separate operating frequencies (978 MHz and 1090 MHz). The ADS-B system receives the ADS-B messages transmitted on one frequency and ADS-R translates and reformats the information for rebroadcast and use on the other frequency. This allows ADS-B In equipped aircraft to see nearby ADS-B Out traffic regardless of the operating link of the other aircraft. Aircraft operating on the same ADS-B frequency exchange information directly and do not require the ADS-R translation function.

AUTOMATIC DIRECTION FINDER– An aircraft radio navigation system which senses and indicates the direction to a L/MF nondirectional radio beacon (NDB) ground transmitter. Direction is indicated to the pilot as a magnetic bearing or as a relative bearing to the longitudinal axis of the aircraft depending on the type of indicator installed in the aircraft. In certain applications, such as military, ADF operations may be based on airborne and ground transmitters in the VHF/UHF frequency spectrum.

(See BEARING.)

(See NONDIRECTIONAL BEACON.)

AUTOMATIC FLIGHT INFORMATION SERVICE (AFIS) – ALASKA FSSs ONLY– The continuous broadcast of recorded non-control information at airports in Alaska where a FSS provides local airport advisory service. The AFIS broadcast automates the repetitive transmission of essential but routine information such as weather, wind, altimeter, favored runway, braking action, airport NOTAMs, and other applicable information. The information is continuously broadcast over a discrete VHF radio frequency (usually the ASOS/AWOS frequency).

AUTOMATIC TERMINAL INFORMATION SERVICE– The continuous broadcast of recorded noncontrol information in selected terminal areas. Its purpose is to improve controller effectiveness and to relieve frequency congestion by automating the repetitive transmission of essential but routine information; e.g., “Los Angeles information Alfa. One three zero zero Coordinated Universal Time. Weather, measured ceiling two thousand overcast, visibility three, haze, smoke, temperature seven one, dew point five seven, wind two five zero at five, altimeter two nine nine six. I-L-S Runway Two Five Left approach in use, Runway Two Five Right closed, advise you have Alfa.”

(See ICAO term AUTOMATIC TERMINAL INFORMATION SERVICE.)

(Refer to AIM.)

AUTOMATIC TERMINAL INFORMATION SERVICE [ICAO]– The provision of current, routine information to arriving and departing aircraft by means of continuous and repetitive broadcasts throughout the day or a specified portion of the day.

AUTOROTATION– A rotorcraft flight condition in which the lifting rotor is driven entirely by action of the air when the rotorcraft is in motion.

a. Autorotative Landing/Touchdown Autorotation. Used by a pilot to indicate that the landing will be made without applying power to the rotor.

b. Low Level Autorotation. Commences at an altitude well below the traffic pattern, usually below 100 feet AGL and is used primarily for tactical military training.

c. 180 degrees Autorotation. Initiated from a downwind heading and is commenced well inside the normal traffic pattern. “Go around” may not be possible during the latter part of this maneuver.

AVAILABLE LANDING DISTANCE (ALD)– The portion of a runway available for landing and roll-out for aircraft cleared for LAHSO. This distance is measured from the landing threshold to the hold-short point.

AVIATION WATCH NOTIFICATION MESSAGE– The Storm Prediction Center (SPC) issues Aviation Watch Notification Messages (SAW) to provide an area threat alert for the aviation meteorology community to forecast organized severe thunderstorms that may produce tornadoes, large hail, and/or convective damaging winds as indicated in Public Watch Notification Messages within the Continental U.S. A SAW message provides a description of the type of watch issued by SPC, a valid time, an approximation of the area in a watch, and primary hazard(s).

AVIATION WEATHER SERVICE– A service provided by the National Weather Service (NWS) and FAA which collects and disseminates pertinent weather information for pilots, aircraft operators, and ATC. Available aviation weather reports and forecasts are displayed at each NWS office and FAA FSS.

(See TRANSCRIBED WEATHER BROADCAST.)

(See WEATHER ADVISORY.)

(Refer to AIM.)

C

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

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

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

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

(Refer to AIM.)

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

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

(See ALTITUDE.)

(See FLIGHT LEVEL.)

CARDINAL FLIGHT LEVELS–

(See CARDINAL ALTITUDES.)

CAT–

(See CLEAR-AIR TURBULENCE.)

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

CBO–

(See COMMUNITY-BASED ORGANIZATION.)

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

(See ICAO term CEILING.)

CEILING [ICAO]– The height above the ground or water of the base of the lowest layer of cloud below 6,000 meters (20,000 feet) covering more than half the sky.

CENTER–

(See AIR ROUTE TRAFFIC CONTROL CENTER.)

CENTER’S AREA– The specified airspace within which an air route traffic control center (ARTCC) provides air traffic control and advisory service.

(See AIR ROUTE TRAFFIC CONTROL CENTER.)

(Refer to AIM.)

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

(See AIRMET.)

(See CONVECTIVE SIGMET.)

(See GRAPHICAL AIRMEN’S METEOROLOGICAL INFORMATION.)

(See SAW.)

(See SIGMET.)

(Refer to AIM.)

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

CEP–

(See **CENTRAL EAST PACIFIC**.)

CERAP–

(See **COMBINED CENTER-RAPCON**.)

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

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

CFR–

(See **CALL FOR RELEASE**.)

CHA

(See **CONTINGENCY HAZARD AREA**)

CHAFF– Thin, narrow metallic reflectors of various lengths and frequency responses, used to reflect radar energy. These reflectors, when dropped from aircraft and allowed to drift downward, result in large targets on the radar display.

CHART SUPPLEMENT– A series of civil/military flight information publications issued by FAA every 56 days consisting of the Chart Supplement U.S., Chart Supplement Alaska, and Chart Supplement Pacific.

CHART SUPPLEMENT ALASKA– A flight information publication designed for use with appropriate IFR or VFR charts which contains data on all airports, seaplane bases, and heliports open to the public including communications data, navigational facilities, airport diagrams, certain special notices, and non-regulatory procedures. Also included in this publication are selected entries needed to support the unique geographical operational conditions of Alaska. This publication is issued in one volume for the state of Alaska.

CHART SUPPLEMENT PACIFIC– A flight information publication designed for use with appropriate IFR or VFR charts which contains data on all airports, seaplane bases, and heliports open to the public including communications data, navigational facilities, airport diagrams, certain special notices, and non-regulatory procedures. Also included in this publication are Instrument Approach Procedures (IAP), Departure Procedures (DP), and Standard Terminal Arrival (STAR) charts, along with selected entries needed to support the unique geographical operational conditions of the Pacific Oceanic region. This publication is issued in one volume for the Hawaiian Islands and other selected Pacific Islands.

CHART SUPPLEMENT U.S.– A flight information publication designed for use with appropriate IFR or VFR charts which contains data on all airports, seaplane bases, and heliports open to the public including communications data, navigational facilities, airport diagrams, certain special notices, and non-regulatory procedures. This publication is issued for the conterminous U.S., Puerto Rico, and the Virgin Islands in seven volumes according to geographical area.

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

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

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

CHASE AIRCRAFT–

(See CHASE.)

CHOP– A form of turbulence.

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

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

(See TURBULENCE.)

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

(See CIRCLE TO RUNWAY.)

(See LANDING MINIMUMS.)

(Refer to AIM.)

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

(See CIRCLE-TO-LAND MANEUVER.)

(See LANDING MINIMUMS.)

(Refer to AIM.)

CIRCLING APPROACH–

(See CIRCLE-TO-LAND MANEUVER.)

CIRCLING MANEUVER–

(See CIRCLE-TO-LAND MANEUVER.)

CIRCLING MINIMA–

(See CONTROLLED AIRSPACE.)

CIVIL AIRCRAFT OPERATION (CAO)– Aircraft operations other than public use.

CLASS A AIRSPACE–

(See CONTROLLED AIRSPACE.)

CLASS B AIRSPACE–

(See CONTROLLED AIRSPACE.)

CLASS C AIRSPACE–

(See CONTROLLED AIRSPACE.)

CLASS D AIRSPACE–

(See CONTROLLED AIRSPACE.)

CLASS E AIRSPACE–

(See CONTROLLED AIRSPACE.)

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

(See UNCONTROLLED AIRSPACE.)

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

(See WIND SHEAR.)

(See JET STREAM.)

CLEAR OF THE RUNWAY–

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

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

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

CLEARANCE–

(See AIR TRAFFIC CLEARANCE.)

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

(See ICAO term CLEARANCE LIMIT.)

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

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

(See ICAO term CLEARANCE VOID TIME.)

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

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

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

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

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

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

CLT–

(See CALCULATED LANDING TIME.)

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

(See CHAFF.)

(See GROUND CLUTTER.)

(See PRECIPITATION.)

(See TARGET.)

(See ICAO term RADAR CLUTTER.)

CMNPS–

(See CANADIAN MINIMUM NAVIGATION PERFORMANCE SPECIFICATION AIRSPACE.)

COA–

(See CERTIFICATE OF WAIVER OR AUTHORIZATION.)

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

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

(See DISCRETE CODE.)

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

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

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

(See AIR ROUTE TRAFFIC CONTROL CENTER.)

(See RADAR APPROACH CONTROL FACILITY.)

COMMON POINT– A significant point over which two or more aircraft will report passing or have reported passing before proceeding on the same or diverging tracks. To establish/maintain longitudinal separation, a controller may determine a common point not originally in the aircraft's flight plan and then clear the aircraft to fly over the point.

(See SIGNIFICANT POINT.)

COMMON PORTION–

(See COMMON ROUTE.)

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

OR

COMMON ROUTE–

(See SEGMENTS OF A SID/STAR)

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

(See DESIGNATED COMMON TRAFFIC ADVISORY FREQUENCY (CTAF) AREA.)

(Refer to AC 90-66, Non-Towered Airport Flight Operations.)

COMMUNITY-BASED ORGANIZATION (CBO)– A membership-based entity, described under Section 501(a,c), whose mission is the furtherance of model aviation. (see also, 49 United States Code (USC) §44809 (h) and Advisory Circular (AC) 91-57).

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

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

(See OUTER MARKER.)

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

(See MIDDLE MARKER.)

(See ICAO term LOCATOR.)

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

COMPLY WITH RESTRICTIONS– An ATC instruction that requires an aircraft being vectored back onto an arrival or departure procedure to comply with all altitude and/or speed restrictions depicted on the procedure. This term may be used in lieu of repeating each remaining restriction that appears on the procedure.

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

(Refer to AIM.)

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

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

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

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

CONFIDENCE MANEUVER– A confidence maneuver consists of one or more turns, a climb or descent, or other maneuver to determine if the pilot in command (PIC) is able to receive and comply with ATC instructions.

CONFLICT ALERT– A function of certain air traffic control automated systems designed to alert radar controllers to existing or pending situations between tracked targets (known IFR or VFR aircraft) that require his/her immediate attention/action.

(See MODE C INTRUDER ALERT.)

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

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

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

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

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

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

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

CONTACT–

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

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

(See **CONTACT APPROACH**.)

(See **RADAR CONTACT**.)

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

(Refer to AIM.)

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

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

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

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

(See **AIRCRAFT HAZARD AREA**.)

(See **REFINED HAZARD AREA**.)

(See **TRANSITIONAL HAZARD AREA**.)

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

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

CONTROL SECTOR– An airspace area of defined horizontal and vertical dimensions for which a controller or group of controllers has air traffic control responsibility, normally within an air route traffic control center or an approach control facility. Sectors are established based on predominant traffic flows, altitude strata, and

controller workload. Pilot communications during operations within a sector are normally maintained on discrete frequencies assigned to the sector.

(See DISCRETE FREQUENCY.)

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

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

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

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

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

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

2. **CLASS B**– Generally, that airspace from the surface to 10,000 feet MSL surrounding the nation’s busiest airports in terms of airport operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored and consists of a surface area and two or more layers (some Class B airspace areas resemble upside-down wedding cakes), and is designed to contain all published instrument procedures once an aircraft enters the airspace. An ATC clearance is required for all aircraft to operate in the area, and all aircraft that are so cleared receive separation services within the airspace. The cloud clearance requirement for VFR operations is “clear of clouds.”

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

(See OUTER AREA.)

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

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

nautical miles of the coast of the 48 contiguous States and Alaska, up to, but not including 18,000 feet MSL, and the airspace above FL 600.

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

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

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

CONTROLLER–

(See AIR TRAFFIC CONTROL SPECIALIST.)

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

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

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

(See AIRMET.)

(See CWA.)

(See GRAPHICAL AIRMEN'S METEOROLOGICAL INFORMATION.)

(See SAW.)

(See SIGMET.)

(Refer to AIM.)

CONVECTIVE SIGNIFICANT METEOROLOGICAL INFORMATION–

(See CONVECTIVE SIGMET.)

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

(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST.)

(See NON-COOPERATIVE SURVEILLANCE.)

(See RADAR.)

(See WIDE AREA MULTILATERATION.)

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

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

COPTER–

(See HELICOPTER.)

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

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

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

COURSE–

- a. The intended direction of flight in the horizontal plane measured in degrees from north.
- b. The ILS localizer signal pattern usually specified as the front course or the back course.
(See BEARING.)
(See INSTRUMENT LANDING SYSTEM.)
(See RADIAL.)

CPDLC–

(See CONTROLLER PILOT DATA LINK COMMUNICATIONS.)

CPL [ICAO]–

(See ICAO term CURRENT FLIGHT PLAN.)

CREWMEMBER (UAS)– A person assigned to perform an operational duty. A UAS crewmember includes the remote pilot in command, the person manipulating the controls, and visual observers but may also include other persons as appropriate or required to ensure the safe operation of the UAS (e.g., sensor operator, ground control station operator).

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.

CSP–

(See CONSTRAINT SATISFACTION POINT)

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

CTA–

(See CONTROLLED TIME OF ARRIVAL.)

(See ICAO term CONTROL AREA.)

CTAF–

(See COMMON TRAFFIC ADVISORY FREQUENCY.)

CTOP–

(See COLLABORATIVE TRAJECTORY OPTIONS PROGRAM)

CTRD–

(See CERTIFIED TOWER RADAR DISPLAY.)

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

CVFP APPROACH–

(See CHARTED VISUAL FLIGHT PROCEDURE APPROACH.)

CWA–

(See CENTER WEATHER ADVISORY and WEATHER ADVISORY.)

CWT–

(See CONSOLIDATED WAKE TURBULENCE.)

G

GATE HOLD PROCEDURES– Procedures at selected airports to hold aircraft at the gate or other ground location whenever departure delays exceed or are anticipated to exceed 15 minutes. The sequence for departure will be maintained in accordance with initial call-up unless modified by flow control restrictions. Pilots should monitor the ground control/clearance delivery frequency for engine start/taxi advisories or new proposed start/taxi time if the delay changes.

GCA–

(See **GROUND CONTROLLED APPROACH**.)

GDP–

(See **GROUND DELAY PROGRAM**.)

GENERAL AVIATION– That portion of civil aviation that does not include scheduled or unscheduled air carriers or commercial space operations.

(See ICAO term **GENERAL AVIATION**.)

GENERAL AVIATION [ICAO]– All civil aviation operations other than scheduled air services and nonscheduled air transport operations for remuneration or hire.

GEO MAP– The digitized map markings associated with the ASR-9 Radar System.

GLIDEPATH–

(See **GLIDESLOPE**.)

GLIDEPATH [ICAO]– A descent profile determined for vertical guidance during a final approach.

GLIDEPATH INTERCEPT ALTITUDE–

(See **GLIDESLOPE INTERCEPT ALTITUDE**.)

GLIDESLOPE– Provides vertical guidance for aircraft during approach and landing. The glideslope/glidepath is based on the following:

- a. Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS; or,
- b. Visual ground aids, such as VASI, which provide vertical guidance for a VFR approach or for the visual portion of an instrument approach and landing.
- c. PAR. Used by ATC to inform an aircraft making a PAR approach of its vertical position (elevation) relative to the descent profile.

(See ICAO term **GLIDEPATH**.)

GLIDESLOPE INTERCEPT ALTITUDE– The published minimum altitude to intercept the glideslope in the intermediate segment of an instrument approach. Government charts use the lightning bolt symbol to identify this intercept point. This intersection is called the Precise Final Approach fix (PFAF). ATC directs a higher altitude, the resultant intercept becomes the PFAF.

(See **FINAL APPROACH FIX**.)

(See **SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE**.)

GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS)– GNSS refers collectively to the worldwide positioning, navigation, and timing determination capability available from one or more satellite constellations. A GNSS constellation may be augmented by ground stations and/or geostationary satellites to improve integrity and position accuracy.

(See **GROUND-BASED AUGMENTATION SYSTEM**.)

(See **SATELLITE-BASED AUGMENTATION SYSTEM**.)

GLOBAL NAVIGATION SATELLITE SYSTEM MINIMUM EN ROUTE IFR ALTITUDE (GNSS MEA)– The minimum en route IFR altitude on a published ATS route or route segment which assures acceptable Global Navigation Satellite System reception and meets obstacle clearance requirements.

(Refer to 14 CFR Part 91.)

(Refer to 14 CFR Part 95.)

GLOBAL POSITIONING SYSTEM (GPS)– GPS refers to the worldwide positioning, navigation and timing determination capability available from the U.S. satellite constellation. The service provided by GPS for civil use is defined in the GPS Standard Positioning System Performance Standard. GPS is composed of space, control, and user elements.

GNSS [ICAO]–

(See GLOBAL NAVIGATION SATELLITE SYSTEM.)

GNSS MEA–

(See GLOBAL NAVIGATION SATELLITE SYSTEM MINIMUM EN ROUTE IFR ALTITUDE.)

GO AHEAD– Proceed with your message. Not to be used for any other purpose.

GO AROUND– Instructions for a pilot to abandon his/her approach to landing. Additional instructions may follow. Unless otherwise advised by ATC, a VFR aircraft or an aircraft conducting visual approach should overfly the runway while climbing to traffic pattern altitude and enter the traffic pattern via the crosswind leg. A pilot on an IFR flight plan making an instrument approach should execute the published missed approach procedure or proceed as instructed by ATC; e.g., “Go around” (additional instructions if required).

(See LOW APPROACH.)

(See MISSED APPROACH.)

GPD–

(See GRAPHIC PLAN DISPLAY.)

GPS–

(See GLOBAL POSITIONING SYSTEM.)

GRAPHICAL AIRMEN’S METEOROLOGICAL INFORMATION– A graphical depiction of weather that may be hazardous to aircraft, but are less severe than SIGMETs. G-AIRMETS are issued 3 hours apart for a period of up to 12 hours into the future for the lower 48 states and coastal waters. The weather hazards depicted can be:

- a. Moderate turbulence
- b. Low-level windshear
- c. Strong surface winds greater than 30 knots
- d. Moderate icing
- e. Freezing level
- f. Mountain obscuration
- g. IFR

(See AIRMET.)

(See CONVECTIVE SIGMET.)

(See CWA.)

(See SAW.)

(See SIGMET.)

(Refer to AIM.)

GRAPHIC PLAN DISPLAY (GPD)– A view available with EDST that provides a graphic display of aircraft, traffic, and notification of predicted conflicts. Graphic routes for Current Plans and Trial Plans are displayed upon controller request.

(See EN ROUTE DECISION SUPPORT TOOL.)

M

MAA–

(See MAXIMUM AUTHORIZED ALTITUDE.)

MACH NUMBER– The ratio of true airspeed to the speed of sound; e.g., MACH .82, MACH 1.6.

(See AIRSPEED.)

MACH TECHNIQUE [ICAO]– Describes a control technique used by air traffic control whereby turbojet aircraft operating successively along suitable routes are cleared to maintain appropriate MACH numbers for a relevant portion of the en route phase of flight. The principal objective is to achieve improved utilization of the airspace and to ensure that separation between successive aircraft does not decrease below the established minima.

MAHWP– Missed Approach Holding Waypoint

MAINTAIN–

a. Concerning altitude/flight level, the term means to remain at the altitude/flight level specified. The phrase “climb and” or “descend and” normally precedes “maintain” and the altitude assignment; e.g., “descend and maintain 5,000.”

b. Concerning other ATC instructions, the term is used in its literal sense; e.g., maintain VFR.

MAINTENANCE PLANNING FRICTION LEVEL– The friction level specified in AC 150/5320-12, Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces, which represents the friction value below which the runway pavement surface remains acceptable for any category or class of aircraft operations but which is beginning to show signs of deterioration. This value will vary depending on the particular friction measurement equipment used.

MAKE SHORT APPROACH– Used by ATC to inform a pilot to alter his/her traffic pattern so as to make a short final approach.

(See TRAFFIC PATTERN.)

MAN PORTABLE AIR DEFENSE SYSTEMS (MANPADS)– MANPADS are lightweight, shoulder-launched, missile systems used to bring down aircraft and create mass casualties. The potential for MANPADS use against airborne aircraft is real and requires familiarity with the subject. Terrorists choose MANPADS because the weapons are low cost, highly mobile, require minimal set-up time, and are easy to use and maintain. Although the weapons have limited range, and their accuracy is affected by poor visibility and adverse weather, they can be fired from anywhere on land or from boats where there is unrestricted visibility to the target.

MANDATORY ALTITUDE– An altitude depicted on an instrument Approach Procedure Chart requiring the aircraft to maintain altitude at the depicted value.

MANPADS–

(See MAN PORTABLE AIR DEFENSE SYSTEMS.)

MAP–

(See MISSED APPROACH POINT.)

MARKER BEACON– An electronic navigation facility transmitting a 75 MHz vertical fan or boneshaped radiation pattern. Marker beacons are identified by their modulation frequency and keying code, and when received by compatible airborne equipment, indicate to the pilot, both aurally and visually, that he/she is passing over the facility.

(See INNER MARKER.)

(See MIDDLE MARKER.)

(See OUTER MARKER.)

(Refer to AIM.)

MARSA–

(See MILITARY AUTHORITY ASSUMES RESPONSIBILITY FOR SEPARATION OF AIRCRAFT.)

MAWP– Missed Approach Waypoint

MAXIMUM AUTHORIZED ALTITUDE– A published altitude representing the maximum usable altitude or flight level for an airspace structure or route segment. It is the highest altitude on a Federal airway, jet route, area navigation low or high route, or other direct route for which an MEA is designated in 14 CFR Part 95 at which adequate reception of navigation aid signals is assured.

MAXIMUM GROSS OPERATING WEIGHT (MGOW)– The maximum gross weight of an aircraft, including fuel and any external objects, at any point during the flight.

MAYDAY– The international radiotelephony distress signal. When repeated three times, it indicates imminent and grave danger and that immediate assistance is requested.

(See PAN-PAN.)

(Refer to AIM.)

MCA–

(See MINIMUM CROSSING ALTITUDE.)

MDA–

(See MINIMUM DESCENT ALTITUDE.)

MEA–

(See MINIMUM EN ROUTE IFR ALTITUDE.)

MEARTS–

(See MICRO-EN ROUTE AUTOMATED RADAR TRACKING SYSTEM.)

METEOROLOGICAL IMPACT STATEMENT– An unscheduled planning forecast describing conditions expected to begin within 4 to 12 hours which may impact the flow of air traffic in a specific center's (ARTCC) area.

METER FIX ARC– A semicircle, equidistant from a meter fix, usually in low altitude relatively close to the meter fix, used to help TBFM/ERAM calculate a meter time, and determine appropriate sector meter list assignments for aircraft not on an established arrival route or assigned a meter fix.

METER REFERENCE ELEMENT (MRE)– A constraint point through which traffic flows are managed. An MRE can be the runway threshold, a meter fix, or a meter arc.

METER REFERENCE POINT LIST (MRP)– A list of TBFM delay information conveyed to the controller on the situation display via the Meter Reference Point View, commonly known as the "Meter List."

METERING–A method of time-regulating traffic flows in the en route and terminal environments.

METERING AIRPORTS– Airports adapted for metering and for which optimum flight paths are defined. A maximum of 15 airports may be adapted.

METERING FIX– A fix along an established route from over which aircraft will be metered prior to entering terminal airspace. Normally, this fix should be established at a distance from the airport which will facilitate a profile descent 10,000 feet above airport elevation (AAE) or above.

MGOW–

(See MAXIMUM GROSS OPERATING WEIGHT.)

MHA–

(See MINIMUM HOLDING ALTITUDE.)

MIA–

(See MINIMUM IFR ALTITUDES.)

N

NAS–

(See NATIONAL AIRSPACE SYSTEM.)

NAT HLA–

(See NORTH ATLANTIC HIGH LEVEL AIRSPACE.)

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

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

(See FLIGHT INFORMATION REGION.)

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

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

NATIONAL SECURITY AREA (NSA)–

(See SPECIAL USE AIRSPACE.)

NAVAID–

(See NAVIGATIONAL AID.)

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

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

Note: The normal service range for T, L, and H class aids is found in the AIM. Certain operational requirements make it necessary to use some of these aids at greater service ranges than specified. Extended range is made possible through flight inspection determinations. Some aids also have lesser service range due to location, terrain, frequency protection, etc. Restrictions to service range are listed in the Chart Supplement.

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

(Refer to 14 CFR Part 91.)

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

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

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

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

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

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

(See AIR NAVIGATION FACILITY.)

NAVSPEC–

(See NAVIGATION SPECIFICATION [ICAO].)

NBCAP AIRSPACE–

(See NATIONAL BEACON CODE ALLOCATION PLAN AIRSPACE.)

NDB–

(See NONDIRECTIONAL BEACON.)

NEGATIVE– “No,” or “permission not granted,” or “that is not correct.”

NEGATIVE CONTACT– Used by pilots to inform ATC that:

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

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

NFDD–

(See NATIONAL FLIGHT DATA DIGEST.)

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

(See ICAO term NIGHT.)

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

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

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

(Refer to AIM.)

NO GYRO VECTOR–

(See NO GYRO APPROACH.)

NO TRANSGRESSION ZONE (NTZ)– The NTZ is a 2,000 foot wide zone, located equidistant between parallel runway or SOIA final approach courses, in which flight is normally not allowed.

NONAPPROACH CONTROL TOWER– Author-izes aircraft to land or takeoff at the airport controlled by the tower or to transit the Class D airspace. The primary function of a nonapproach control tower is the sequencing of aircraft in the traffic pattern and on the landing area. Nonapproach control towers also separate aircraft operating under instrument flight rules clearances from approach controls and centers. They provide ground control services to aircraft, vehicles, personnel, and equipment on the airport movement area.

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

POINT-TO-POINT (PTP)– A level of NRR service for aircraft that is based on traditional waypoints in their FMSs or RNAV equipage.

POLAR TRACK STRUCTURE– A system of organized routes between Iceland and Alaska which overlie Canadian MNPS Airspace.

POSITION REPORT– A report over a known location as transmitted by an aircraft to ATC.

(Refer to AIM.)

POSITION SYMBOL– A computer-generated indication shown on a radar display to indicate the mode of tracking.

POSITIVE CONTROL– The separation of all air traffic within designated airspace by air traffic control.

PRACTICE INSTRUMENT APPROACH– An instrument approach procedure conducted by a VFR or an IFR aircraft for the purpose of pilot training or proficiency demonstrations.

PRE-DEPARTURE CLEARANCE– An application with the Terminal Data Link System (TDLS) that provides clearance information to subscribers, through a service provider, in text to the cockpit or gate printer.

PRE-DEPARTURE REROUTE (PDRR)– A capability within the Traffic Flow Management System that enables ATC to quickly amend and execute revised departure clearances that mitigate en route constraints or balance en route traffic flows.

PREARRANGED COORDINATION– A standardized procedure which permits an air traffic controller to enter the airspace assigned to another air traffic controller without verbal coordination. The procedures are defined in a facility directive which ensures approved separation between aircraft.

PREARRANGED COORDINATION PROCEDURES– A facility's standardized procedure that describes the process by which one controller shall allow an aircraft to penetrate or transit another controller's airspace in a manner that assures approved separation without individual coordination for each aircraft.

PRECIPITATION– Any or all forms of water particles (rain, sleet, hail, or snow) that fall from the atmosphere and reach the surface.

PRECIPITATION RADAR WEATHER DESCRIPTIONS– Existing radar systems cannot detect turbulence. However, there is a direct correlation between the degree of turbulence and other weather features associated with thunderstorms and the weather radar precipitation intensity. Controllers will issue (where capable) precipitation intensity as observed by radar when using weather and radar processor (WARP) or NAS ground-based digital radars with weather capabilities. When precipitation intensity information is not available, the intensity will be described as UNKNOWN. When intensity levels can be determined, they shall be described as:

- a. LIGHT (< 26 dBZ)
- b. MODERATE (26 to 40 dBZ)
- c. HEAVY (> 40 to 50 dBZ)
- d. EXTREME (> 50 dBZ)

(Refer to the Aviation Weather Handbook, FAA-H-8083-28.)

PRECISION APPROACH–

(See PRECISION APPROACH PROCEDURE.)

PRECISION APPROACH PROCEDURE– A standard instrument approach procedure in which an electronic glideslope or other type of glidepath is provided; e.g., ILS, PAR, and GLS.

(See INSTRUMENT LANDING SYSTEM.)

(See PRECISION APPROACH RADAR.)

PRECISION APPROACH RADAR– Radar equipment in some ATC facilities operated by the FAA and/or the military services at joint-use civil/military locations and separate military installations to detect and display azimuth, elevation, and range of aircraft on the final approach course to a runway. This equipment may be used

to monitor certain nonradar approaches, but is primarily used to conduct a precision instrument approach (PAR) wherein the controller issues guidance instructions to the pilot based on the aircraft's position in relation to the final approach course (azimuth), the glidepath (elevation), and the distance (range) from the touchdown point on the runway as displayed on the radar scope.

(See GLIDEPATH.)

(See PAR.)

(See ICAO term PRECISION APPROACH RADAR.)

(Refer to AIM.)

PRECISION APPROACH RADAR [ICAO]– Primary radar equipment used to determine the position of an aircraft during final approach, in terms of lateral and vertical deviations relative to a nominal approach path, and in range relative to touchdown.

PRECISION OBSTACLE FREE ZONE (POFZ)– An 800 foot wide by 200 foot long area centered on the runway centerline adjacent to the threshold designed to protect aircraft flying precision approaches from ground vehicles and other aircraft when ceiling is less than 250 feet or visibility is less than 3/4 statute mile (or runway visual range below 4,000 feet.)

PRECISION RUNWAY MONITOR (PRM) SYSTEM– Provides air traffic controllers monitoring the NTZ during simultaneous close parallel PRM approaches with precision, high update rate secondary surveillance data. The high update rate surveillance sensor component of the PRM system is only required for specific runway or approach course separation. The high resolution color monitoring display, Final Monitor Aid (FMA) of the PRM system, or other FMA with the same capability, presents NTZ surveillance track data to controllers along with detailed maps depicting approaches and no transgression zone and is required for all simultaneous close parallel PRM NTZ monitoring operations.

(Refer to AIM.)

PREDICTIVE WIND SHEAR ALERT SYSTEM (PWS)– A self-contained system used on board some aircraft to alert the flight crew to the presence of a potential wind shear. PWS systems typically monitor 3 miles ahead and 25 degrees left and right of the aircraft's heading at or below 1200' AGL. Departing flights may receive a wind shear alert after they start the takeoff roll and may elect to abort the takeoff. Aircraft on approach receiving an alert may elect to go around or perform a wind shear escape maneuver.

PREFERRED IFR ROUTES– Routes established between busier airports to increase system efficiency and capacity. They normally extend through one or more ARTCC areas and are designed to achieve balanced traffic flows among high density terminals. IFR clearances are issued on the basis of these routes except when severe weather avoidance procedures or other factors dictate otherwise. Preferred IFR Routes are listed in the Chart Supplement U.S., and are also available at https://www.fly.faa.gov/rmt/nfdc_preferred_routes_database.jsp. If a flight is planned to or from an area having such routes but the departure or arrival point is not listed in the Chart Supplement U.S., pilots may use that part of a Preferred IFR Route which is appropriate for the departure or arrival point that is listed. Preferred IFR Routes may be defined by DPs, SIDs, or STARs; NAVAIDs, Waypoints, etc.; high or low altitude airways; or any combinations thereof. Because they often share elements with adapted routes, pilots' use of preferred IFR routes can minimize flight plan route amendments.

(See ADAPTED ROUTES.)

(See CENTER'S AREA.)

(See INSTRUMENT APPROACH PROCEDURE.)

(See INSTRUMENT DEPARTURE PROCEDURE.)

(See STANDARD TERMINAL ARRIVAL.)

(Refer to CHART SUPPLEMENT U.S.)

PRE-FLIGHT PILOT BRIEFING–

(See PILOT BRIEFING.)

PREVAILING VISIBILITY–

(See VISIBILITY.)

b. Advanced – Required Navigation Performance (A–RNP). A navigation specification based on RNP that requires advanced functions such as scalable RNP, radius–to–fix (RF) legs, and tactical parallel offsets. This sophisticated Navigation Specification (NavSpec) is designated by the abbreviation “A–RNP”.

c. Required Navigation Performance (RNP) Airspace. A generic term designating airspace, route(s), leg(s), operation(s), or procedure(s) where minimum required navigational performance (RNP) have been established.

d. Actual Navigation Performance (ANP). A measure of the current estimated navigational performance. Also referred to as Estimated Position Error (EPE).

e. Estimated Position Error (EPE). A measure of the current estimated navigational performance. Also referred to as Actual Navigation Performance (ANP).

f. Lateral Navigation (LNAV). A function of area navigation (RNAV) equipment which calculates, displays, and provides lateral guidance to a profile or path.

g. Vertical Navigation (VNAV). A function of area navigation (RNAV) equipment which calculates, displays, and provides vertical guidance to a profile or path.

REROUTE IMPACT ASSESSMENT (RRIA)– A capability within the Traffic Flow Management System that is used to define and evaluate a potential reroute prior to implementation, with or without miles–in–trail (MIT) restrictions. RRIA functions estimate the impact on demand (e.g., sector loads) and performance (e.g., flight delay). Using RRIA, traffic management personnel can determine whether the reroute will sufficiently reduce demand in the Flow Constraint Area and not create excessive “spill over” demand in the adjacent airspace on a specific route segment or point of interest (POI).

RESCUE COORDINATION CENTER (RCC)– A search and rescue (SAR) facility equipped and manned to coordinate and control SAR operations in an area designated by the SAR plan. The U.S. Coast Guard and the U.S. Air Force have responsibility for the operation of RCCs.

(See ICAO term RESCUE CO-ORDINATION CENTRE.)

RESCUE CO-ORDINATION CENTRE [ICAO]– A unit responsible for promoting efficient organization of search and rescue service and for coordinating the conduct of search and rescue operations within a search and rescue region.

RESOLUTION ADVISORY– A display indication given to the pilot by the Traffic alert and Collision Avoidance System (TCAS II) recommending a maneuver to increase vertical separation relative to an intruding aircraft. Positive, negative, and vertical speed limit (VSL) advisories constitute the resolution advisories. A resolution advisory is also classified as corrective or preventive.

RESTRICTED AREA–

(See SPECIAL USE AIRSPACE.)

(See ICAO term RESTRICTED AREA.)

RESTRICTED AREA [ICAO]– An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions.

RESUME NORMAL SPEED– Used by ATC to advise a pilot to resume an aircraft’s normal operating speed. It is issued to terminate a speed adjustment where no published speed restrictions apply. It does not delete speed restrictions in published procedures of upcoming segments of flight. This does not relieve the pilot of those speed restrictions that are applicable to 14 CFR Section 91.117.

RESUME OWN NAVIGATION– Used by ATC to advise a pilot to resume his/her own navigational responsibility. It is issued after completion of a radar vector or when radar contact is lost while the aircraft is being radar vectored.

(See RADAR CONTACT LOST.)

(See RADAR SERVICE TERMINATED.)

RESUME PUBLISHED SPEED– Used by ATC to advise a pilot to resume published speed restrictions that are applicable to a SID, STAR, or other instrument procedure. It is issued to terminate a speed adjustment where speed restrictions are published on a charted procedure.

RHA–

(See REFINED HAZARD AREA.)

RID–

(See REMOTE IDENTIFICATION.)

RMI–

(See RADIO MAGNETIC INDICATOR.)

RNAV–

(See AREA NAVIGATION (RNAV).)

RNAV APPROACH– An instrument approach procedure which relies on aircraft area navigation equipment for navigational guidance.

(See AREA NAVIGATION (RNAV).)

(See INSTRUMENT APPROACH PROCEDURE.)

RNAV VISUAL FLIGHT PROCEDURE (RVFP)– An RVFP is a special visual flight procedure flown on an IFR flight plan. It is flown in visual conditions and clear of clouds must be maintained. An RVFP is flown using an approved RNAV system to maintain published lateral and vertical paths to runways without an instrument approach procedure. It requires an ATC clearance and may begin at other points along the path of the charted procedure when approved by ATC. An RVFP is not published in the Federal Register for public use and the operator is required to have a specific Operations Specification approval. Required ceiling and visibility minima are published on the procedure chart. An RVFP does not have a missed approach procedure and is not evaluated for obstacle protection.

ROAD RECONNAISSANCE (RC)– Military activity requiring navigation along roads, railroads, and rivers. Reconnaissance route/route segments are seldom along a straight line and normally require a lateral route width of 10 NM to 30 NM and an altitude range of 500 feet to 10,000 feet AGL.

ROGER– I have received all of your last transmission. It should not be used to answer a question requiring a yes or a no answer.

(See AFFIRMATIVE.)

(See NEGATIVE.)

ROLLOUT RVR–

(See VISIBILITY.)

ROTOR WASH– A phenomenon resulting from the vertical down wash of air generated by the main rotor(s) of a helicopter.

ROUND-ROBIN FLIGHT PLAN– A single flight plan filed from the departure airport to an intermediary destination(s) and then returning to the original departure airport.

ROUTE– A defined path, consisting of one or more courses in a horizontal plane, which aircraft traverse over the surface of the earth.

(See AIRWAY.)

(See JET ROUTE.)

(See PUBLISHED ROUTE.)

(See UNPUBLISHED ROUTE.)

■ **ROUTE ACTION NOTIFICATION**– EDST notification that an ADR/ADAR/AAR has been applied to the flight plan.

(See ATC PREFERRED ROUTE NOTIFICATION.)

(See EN ROUTE DECISION SUPPORT TOOL.)

S

SAA–

(See SENSE AND AVOID.)

(See SPECIAL ACTIVITY AIRSPACE.)

SAFETY ALERT– A safety alert issued by ATC to aircraft under their control if ATC is aware the aircraft is at an altitude which, in the controller’s judgment, places the aircraft in unsafe proximity to terrain, obstructions, or other aircraft. The controller may discontinue the issuance of further alerts if the pilot advises he/she is taking action to correct the situation or has the other aircraft in sight.

a. Terrain/Obstruction Alert– A safety alert issued by ATC to aircraft under their control if ATC is aware the aircraft is at an altitude which, in the controller’s judgment, places the aircraft in unsafe proximity to terrain/obstructions; e.g., “Low Altitude Alert, check your altitude immediately.”

b. Aircraft Conflict Alert– A safety alert issued by ATC to aircraft under their control if ATC is aware of an aircraft that is not under their control at an altitude which, in the controller’s judgment, places both aircraft in unsafe proximity to each other. With the alert, ATC will offer the pilot an alternate course of action when feasible; e.g., “Traffic Alert, advise you turn right heading zero nine zero or climb to eight thousand immediately.”

Note: The issuance of a safety alert is contingent upon the capability of the controller to have an awareness of an unsafe condition. The course of action provided will be predicated on other traffic under ATC control. Once the alert is issued, it is solely the pilot’s prerogative to determine what course of action, if any, he/she will take.

SAFETY LOGIC SYSTEM– A software enhancement to ASDE–3, ASDE–X, and ASSC, that predicts the path of aircraft landing and/or departing, and/or vehicular movements on runways. Visual and aural alarms are activated when the safety logic projects a potential collision. The Airport Movement Area Safety System (AMASS) is a safety logic system enhancement to the ASDE–3. The Safety Logic System for ASDE–X and ASSC is an integral part of the software program.

SAFETY LOGIC SYSTEM ALERTS–

a. ALERT–

1. An actual situation involving two real Safety Logic tracks (aircraft/aircraft, aircraft/vehicle, or aircraft/other tangible object) that the Safety Logic System has predicted will result in an imminent collision, based upon the Safety Logic parameters.

2. An actual situation involving a single Safety Logic track arriving to, or departing from, a closed runway.

3. An actual situation involving a single Safety Logic track arriving to a taxiway.

b. FALSE ALERT–

1. Alerts generated by one or more false surface radar or cooperative surveillance targets, that the ASDE system has interpreted as real tracks and placed into Safety Logic.

2. Alerts in which the Safety Logic System did not perform correctly, based upon the design specifications and Safety Logic parameters.

3. Alerts generated by surface radar targets caused by moderate or greater precipitation.

c. NUISANCE ALERT–

An alert in which one or more of the following is true:

1. The alert is generated by a known situation that is not considered an unsafe operation, such as LAHSO or other approved operations.

2. The alert is generated by inaccurate cooperative surveillance data received by the Safety Logic System.

3. One or more of the aircraft involved in the alert is not intending to use a runway/taxiway (helicopter, pipeline patrol, non–Mode C overflight, etc.).

d. VALID NON–ALERT– A situation in which the Safety Logic System correctly determines that an alert is not required, based upon the design specifications and Safety Logic parameters.

e. INVALID NON-ALERT- A situation in which the Safety Logic System did not issue an alert when an alert was required, based upon the design specifications and Safety Logic parameters.

SAIL BACK- A maneuver during high wind conditions (usually with power off) where float plane movement is controlled by water rudders/opening and closing cabin doors.

SAME DIRECTION AIRCRAFT- Aircraft are operating in the same direction when:

- a. They are following the same track in the same direction; or
- b. Their tracks are parallel and the aircraft are flying in the same direction; or
- c. Their tracks intersect at an angle of less than 45 degrees.

SAR-

(See **SEARCH AND RESCUE**.)

SATELLITE-BASED AUGMENTATION SYSTEM (SBAS) - A wide coverage augmentation system in which the user receives augmentation information from a satellite-based transmitter.

(See **WIDE-AREA AUGMENTATION SYSTEM (WAAS)**.)

SAW-

(See **AVIATION WATCH NOTIFICATION MESSAGE**.)

SAY AGAIN- Used to request a repeat of the last transmission. Usually specifies transmission or portion thereof not understood or received; e.g., "Say again all after **ABRAM VOR**."

SAY ALTITUDE- Used by ATC to ascertain an aircraft's specific altitude/flight level. When the aircraft is climbing or descending, the pilot should state the indicated altitude rounded to the nearest 100 feet.

SAY HEADING- Used by ATC to request an aircraft heading. The pilot should state the actual heading of the aircraft.

SCHEDULED TIME OF ARRIVAL (STA)- A STA is the desired time that an aircraft should cross a certain point (landing or metering fix). It takes other traffic and airspace configuration into account. A STA time shows the results of the TBFM scheduler that has calculated an arrival time according to parameters such as optimized spacing, aircraft performance, and weather.

SDF-

(See **SIMPLIFIED DIRECTIONAL FACILITY**.)

SE SAR-

(See **SURVEILLANCE ENHANCED SEARCH AND RESCUE**.)

SEA LANE- A designated portion of water outlined by visual surface markers for and intended to be used by aircraft designed to operate on water.

SEARCH AND RESCUE- A service which seeks missing aircraft and assists those found to be in need of assistance. It is a cooperative effort using the facilities and services of available Federal, state and local agencies. The U.S. Coast Guard is responsible for coordination of search and rescue for the Maritime Region, and the U.S. Air Force is responsible for search and rescue for the Inland Region. Information pertinent to search and rescue should be passed through any air traffic facility or be transmitted directly to the Rescue Coordination Center by telephone.

(See **FLIGHT SERVICE STATION**.)

(See **RESCUE COORDINATION CENTER**.)

(Refer to **AIM**.)

SEARCH AND RESCUE FACILITY- A facility responsible for maintaining and operating a search and rescue (SAR) service to render aid to persons and property in distress. It is any SAR unit, station, NET, or other operational activity which can be usefully employed during an SAR Mission; e.g., a Civil Air Patrol Wing, or a Coast Guard Station.

(See **SEARCH AND RESCUE**.)

SECNOT–

(See SECURITY NOTICE.)

SECONDARY RADAR TARGET– A target derived from a transponder return presented on a radar display.

SECTIONAL AERONAUTICAL CHARTS–

(See AERONAUTICAL CHART.)

SECTOR LIST DROP INTERVAL– A parameter number of minutes after the meter fix time when arrival aircraft will be deleted from the arrival sector list.

SECURITY NOTICE (SECNOT) – A SECNOT is a request originated by the Air Traffic Security Coordinator (ATSC) for an extensive communications search for aircraft involved, or suspected of being involved, in a security violation, or are considered a security risk. A SECNOT will include the aircraft identification, search area, and expiration time. The search area, as defined by the ATSC, could be a single airport, multiple airports, a radius of an airport or fix, or a route of flight. Once the expiration time has been reached, the SECNOT is considered to be canceled.

SECURITY SERVICES AIRSPACE – Areas established through the regulatory process or by NOTAM, issued by the Administrator under title 14, CFR, sections 99.7, 91.141, and 91.139, which specify that ATC security services are required; i.e., ADIZ or temporary flight rules areas.

SEE AND AVOID– When weather conditions permit, pilots operating IFR or VFR are required to observe and maneuver to avoid other aircraft. Right-of-way rules are contained in 14 CFR Part 91.

SEGMENTED CIRCLE– A system of visual indicators designed to provide traffic pattern information at airports without operating control towers.

(Refer to AIM.)

SEGMENTS OF A SID/STAR–

a. En Route Transition– The segment(s) of a SID/STAR that connect to/from en route flight. Not all SIDs/STARs will contain an en route transition.

b. En Route Transition Waypoint– The NAVAID/fix/waypoint that defines the beginning of the SID/STAR en route transition.

c. Common Route– The segment(s) of a SID/STAR procedure that provides a single route serving an airport/runway or multiple airports/runways. The common route may consist of a single point. Not all conventional SIDs will contain a common route.

d. Runway Transition– The segment(s) of a SID/STAR between the common route/point and the runway(s). Not all SIDs/STARs will contain a runway transition.

e. Runway Transition Waypoint (RTW)– On a STAR, the NAVAID/fix/waypoint that defines the end of the common route or en route transition and the beginning of a runway transition (In the arrival route description found on the STAR chart, the last fix of the common route and the first fix of the runway transition(s)).

SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE– An instrument approach procedure may have as many as four separate segments depending on how the approach procedure is structured.

a. Initial Approach– The segment between the initial approach fix and the intermediate fix or the point where the aircraft is established on the intermediate course or final approach course.

(See ICAO term INITIAL APPROACH SEGMENT.)

b. Intermediate Approach– The segment between the intermediate fix or point and the final approach fix.

(See ICAO term INTERMEDIATE APPROACH SEGMENT.)

c. Final Approach– The segment between the final approach fix or point and the runway, airport, or missed approach point.

(See ICAO term FINAL APPROACH SEGMENT.)

d. Missed Approach– The segment between the missed approach point or the point of arrival at decision height and the missed approach fix at the prescribed altitude.

(Refer to 14 CFR Part 97.)

(See ICAO term MISSED APPROACH PROCEDURE.)

SELF-BRIEFING– A self-briefing is a review, using automated tools, of all meteorological and aeronautical information that may influence the pilot in planning, altering, or canceling a proposed route of flight.

SENSE AND AVOID (SAA) – The capability of an unmanned aircraft to detect (sense) and avoid collisions with other aircraft and all obstacles, whether airborne or on the ground while operating in the NAS.

SEPARATION– In air traffic control, the spacing of aircraft to achieve their safe and orderly movement in flight and while landing and taking off.

(See **SEPARATION MINIMA**.)

(See ICAO term **SEPARATION**.)

SEPARATION [ICAO]– Spacing between aircraft, levels or tracks.

SEPARATION MINIMA– The minimum longitudinal, lateral, or vertical distances by which aircraft are spaced through the application of air traffic control procedures.

(See **SEPARATION**.)

SERVICE– A generic term that designates functions or assistance available from or rendered by air traffic control. For example, Class C service would denote the ATC services provided within a Class C airspace area.

SEVERE WEATHER AVOIDANCE PLAN (SWAP)– An approved plan to minimize the affect of severe weather on traffic flows in impacted terminal and/or ARTCC areas. A SWAP is normally implemented to provide the least disruption to the ATC system when flight through portions of airspace is difficult or impossible due to severe weather.

SEVERE WEATHER FORECAST ALERTS– Preliminary messages issued in order to alert users that a Severe Weather Watch Bulletin (WW) is being issued. These messages define areas of possible severe thunderstorms or tornado activity. The messages are unscheduled and issued as required by the Storm Prediction Center (SPC) at Norman, Oklahoma.

(See **AIRMET**.)

(See **CONVECTIVE SIGMET**.)

(See **CWA**.)

(See **GRAPHICAL AIRMEN'S METEOROLOGICAL INFORMATION**.)

(See **SIGMET**.)

SFA–

(See **SINGLE FREQUENCY APPROACH**.)

SFO–

(See **SIMULATED FLAMEOUT**.)

SFI

(See **SPECIAL GOVERNMENT INTEREST**.)

SHF–

(See **SUPER HIGH FREQUENCY**.)

SHORT RANGE CLEARANCE– A clearance issued to a departing IFR flight which authorizes IFR flight to a specific fix short of the destination while air traffic control facilities are coordinating and obtaining the complete clearance.

SHORT TAKEOFF AND LANDING AIRCRAFT (STOL)– An aircraft which, at some weight within its approved operating weight, is capable of operating from a runway in compliance with the applicable STOL characteristics, airworthiness, operations, noise, and pollution standards.

(See **VERTICAL TAKEOFF AND LANDING AIRCRAFT**.)

SIAP–

(See **STANDARD INSTRUMENT APPROACH PROCEDURE**.)

SID–

(See **STANDARD INSTRUMENT DEPARTURE**.)

SPACE LAUNCH AND REENTRY AREA– Locations where commercial space launch and/or reentry operations occur. For pilot awareness, a rocket-shaped symbol is used to depict space launch and reentry areas on sectional aeronautical charts.

SPEAK SLOWER– Used in verbal communications as a request to reduce speech rate.

SPECIAL GOVERNMENT INTEREST (SGI)– A near real-time airspace authorization for Part 91 or Part 107 UAS, which supports activities that answer significant and urgent governmental interests. These include: national defense, homeland security, law enforcement, and emergency operations objectives.

SPECIAL ACTIVITY AIRSPACE (SAA)– Airspace with defined dimensions within the National Airspace System wherein limitations may be imposed upon operations for national defense, homeland security, public interest, or public safety. Special activity airspace includes but is not limited to the following: Air Traffic Control Assigned Airspace (ATCAA), Altitude Reservations (ALTRV), Military Training Routes (MTR), Air Refueling Tracks and Anchors, Temporary Flight Restrictions (TFR), Special Security Instructions (SSI), etc. Special Use Airspace (SUA) is a subset of Special Activity Airspace.

(See SPECIAL USE AIRSPACE.)

SPECIAL AIR TRAFFIC RULES (SATR)– Rules that govern procedures for conducting flights in certain areas listed in 14 CFR Part 93. The term “SATR” is used in the United States to describe the rules for operations in specific areas designated in the Code of Federal Regulations.

(Refer to 14 CFR Part 93.)

SPECIAL EMERGENCY– A condition of air piracy or other hostile act by a person(s) aboard an aircraft which threatens the safety of the aircraft or its passengers.

SPECIAL FLIGHT RULES AREA (SFRA)– An area in the NAS, described in 14 CFR Part 93, wherein the flight of aircraft is subject to special traffic rules, unless otherwise authorized by air traffic control. Not all areas listed in 14 CFR Part 93 are designated SFRA, but special air traffic rules apply to all areas described in 14 CFR Part 93.

SPECIAL INSTRUMENT APPROACH PROCEDURE–

(See INSTRUMENT APPROACH PROCEDURE.)

SPECIAL USE AIRSPACE– Airspace of defined dimensions identified by an area on the surface of the earth wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. Types of special use airspace are:

a. Alert Area– Airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft. Alert Areas are depicted on aeronautical charts for the information of nonparticipating pilots. All activities within an Alert Area are conducted in accordance with Federal Aviation Regulations, and pilots of participating aircraft as well as pilots transiting the area are equally responsible for collision avoidance.

b. Controlled Firing Area– Airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons and property on the ground.

c. Military Operations Area (MOA)– Permanent and temporary MOAs are airspace established outside of Class A airspace area to separate or segregate certain nonhazardous military activities from IFR traffic and to identify for VFR traffic where these activities are conducted. Permanent MOAs are depicted on Sectional Aeronautical, VFR Terminal Area, and applicable En Route Low Altitude Charts.

Note: Temporary MOAs are not charted.

(Refer to AIM.)

d. National Security Area (NSA)– Airspace of defined vertical and lateral dimensions established at locations where there is a requirement for increased security of ground facilities. Pilots are requested to voluntarily avoid flying through the depicted NSA. When a greater level of security is required, flight through an NSA may be temporarily prohibited by establishing a TFR under the provisions of 14 CFR Section 99.7. Such prohibitions will be issued by FAA Headquarters and disseminated via the U.S. NOTAM System.

(Refer to AIM)

e. Prohibited Area– Airspace designated under 14 CFR Part 73 within which no person may operate an aircraft without the permission of the using agency.

(Refer to AIM.)

(Refer to En Route Charts.)

f. Restricted Area– Permanent and temporary restricted areas are airspace designated under 14 CFR Part 73, within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint use and IFR/VFR operations in the area may be authorized by the controlling ATC facility when it is not being utilized by the using agency. Permanent restricted areas are depicted on Sectional Aeronautical, VFR Terminal Area, and applicable En Route charts. Where joint use is authorized, the name of the ATC controlling facility is also shown.

Note: Temporary restricted areas are not charted.

(Refer to 14 CFR Part 73.)

(Refer to AIM.)

g. Warning Area– A warning area is airspace of defined dimensions extending from 3 nautical miles outward from the coast of the United States, that contains activity that may be hazardous to nonparticipating aircraft. The purpose of such warning area is to warn nonparticipating pilots of the potential danger. A warning area may be located over domestic or international waters or both.

SPECIAL VFR CONDITIONS– Meteorological conditions that are less than those required for basic VFR flight in Class B, C, D, or E surface areas and in which some aircraft are permitted flight under visual flight rules.

(See SPECIAL VFR OPERATIONS.)

(Refer to 14 CFR Part 91.)

SPECIAL VFR FLIGHT [ICAO]– A VFR flight cleared by air traffic control to operate within Class B, C, D, and E surface areas in meteorological conditions below VMC.

SPECIAL VFR OPERATIONS– Aircraft operating in accordance with clearances within Class B, C, D, and E surface areas in weather conditions less than the basic VFR weather minima. Such operations must be requested by the pilot and approved by ATC.

(See SPECIAL VFR CONDITIONS.)

(See ICAO term SPECIAL VFR FLIGHT.)

SPECIALIST–PROVIDED SERVICES–

Services delivered directly by a flight service specialist via ground/ground communication, air/ground communication, in-person, or technology (for example, speech-to-text, email, or short message service).

SPEED–

(See AIRSPEED.)

(See GROUND SPEED.)

SPEED ADJUSTMENT– An ATC procedure used to request pilots to adjust aircraft speed to a specific value for the purpose of providing desired spacing. Pilots are expected to maintain a speed of plus or minus 10 knots or 0.02 Mach number of the specified speed. Examples of speed adjustments are:

a. “Increase/reduce speed to Mach point (number).”

b. “Increase/reduce speed to (speed in knots)” or “Increase/reduce speed (number of knots) knots.”

SPEED ADVISORY– Speed advisories that are generated within Time-Based Flow Management to assist controllers to meet the Scheduled Time of Arrival (STA) at the meter fix/meter arc. See also Ground-Based Interval Management–Spacing (GIM–S) Speed Advisory.

SPEED BRAKES– Moveable aerodynamic devices on aircraft that reduce airspeed during descent and landing.

SPEED SEGMENTS– Portions of the arrival route between the transition point and the vertex along the optimum flight path for which speeds and altitudes are specified. There is one set of arrival speed segments adapted from each transition point to each vertex. Each set may contain up to six segments.

SPOOFING– Denotes emissions of GNSS–like signals that may be acquired and tracked in combination with or instead of the intended signals by civil receivers. The onset of spoofing effects can be instantaneous or delayed, and effects can persist after the spoofing has ended. Spoofing can result in false and potentially confusing, or hazardingly misleading, position, navigation, and/or date/time information in addition to loss of GNSS use.

SQUAWK (Mode, Code, Function)– Used by ATC to instruct a pilot to activate the aircraft transponder and ADS–B Out with altitude reporting enabled, or (military) to activate only specific modes, codes, or functions. Examples: “Squawk five seven zero seven;” “Squawk three/alpha, two one zero five.”

(See TRANSPONDER.)

STA–

(See SCHEDULED TIME OF ARRIVAL.)

STAGING/QUEUING– The placement, integration, and segregation of departure aircraft in designated movement areas of an airport by departure fix, EDCT, and/or restriction.

STAND BY– Means the controller or pilot must pause for a few seconds, usually to attend to other duties of a higher priority. Also means to wait as in “stand by for clearance.” The caller should reestablish contact if a delay is lengthy. “Stand by” is not an approval or denial.

STANDARD INSTRUMENT APPROACH PROCEDURE (SIAP)–

(See INSTRUMENT APPROACH PROCEDURE.)

STANDARD INSTRUMENT DEPARTURE (SID)– A preplanned instrument flight rule (IFR) air traffic control (ATC) departure procedure printed for pilot/controller use in graphic form to provide obstacle clearance and a transition from the terminal area to the appropriate en route structure. SIDs are primarily designed for system enhancement to expedite traffic flow and to reduce pilot/controller workload. ATC clearance must always be received prior to flying a SID.

(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)

(See OBSTACLE DEPARTURE PROCEDURE.)

(Refer to AIM.)

STANDARD RATE TURN– A turn of three degrees per second.

STANDARD TERMINAL ARRIVAL (STAR)– A preplanned instrument flight rule (IFR) air traffic control arrival procedure published for pilot use in graphic and/or textual form. STARs provide transition from the en route structure to an outer fix or an instrument approach fix/arrival waypoint in the terminal area.

STANDARD TERMINAL ARRIVAL CHARTS–

(See AERONAUTICAL CHART.)

STANDARD TERMINAL AUTOMATION REPLACEMENT SYSTEM (STARS)–

(See DTAS.)

STAR–

(See STANDARD TERMINAL ARRIVAL.)

STATE AIRCRAFT– Aircraft used in military, customs and police service, in the exclusive service of any government or of any political subdivision thereof, including the government of any state, territory, or possession of the United States or the District of Columbia, but not including any government-owned aircraft engaged in carrying persons or property for commercial purposes.

STATIC RESTRICTIONS– Those restrictions that are usually not subject to change, fixed, in place, and/or published.

STATIONARY AIRSPACE RESERVATION– The term used in oceanic ATC for airspace that encompasses activities in a fixed volume of airspace to be occupied for a specified time period. Stationary Airspace Reservations may include activities such as special tests of weapons systems or equipment; certain U.S. Navy carrier, fleet, and anti–submarine operations; rocket, missile, and drone operations; and certain aerial refueling or similar operations.

(See STATIONARY ALTITUDE RESERVATION.)

STATIONARY ALTITUDE RESERVATION (STATIONARY ALTRV)– An altitude reservation which encompasses activities in a fixed volume of airspace to be occupied for a specified time period. Stationary ALTRVs may include activities such as special tests of weapons systems or equipment; certain U.S. Navy carrier, fleet, and anti–submarine operations; rocket, missile, and drone operations; and certain aerial refueling or similar operations.

STEP TAXI– To taxi a float plane at full power or high RPM.

STEP TURN– A maneuver used to put a float plane in a planing configuration prior to entering an active sea lane for takeoff. The STEP TURN maneuver should only be used upon pilot request.

STEPDOWN FIX– A fix permitting additional descent within a segment of an instrument approach procedure by identifying a point at which a controlling obstacle has been safely overflown.

STEREO ROUTE– A routinely used route of flight established by users and ARTCCs identified by a coded name; e.g., ALPHA 2. These routes minimize flight plan handling and communications.

STNR ALT RESERVATION– An abbreviation for Stationary Altitude Reservation commonly used in NOTAMs.

(See STATIONARY ALTITUDE RESERVATION.)

STOL AIRCRAFT–

(See SHORT TAKEOFF AND LANDING AIRCRAFT.)

STOP ALTITUDE SQUAWK– Used by ATC to instruct a pilot to turn off the automatic altitude reporting feature of the aircraft transponder and ADS–B Out. It is issued when a verbally reported altitude varies by 300 feet or more from the automatic altitude report.

(See ALTITUDE READOUT.)

(See TRANSPONDER.)

STOP AND GO– A procedure wherein an aircraft will land, make a complete stop on the runway, and then commence a takeoff from that point.

(See LOW APPROACH.)

(See OPTION APPROACH.)

STOP BURST–

(See STOP STREAM.)

STOP BUZZER–

(See STOP STREAM.)

STOP SQUAWK (Mode or Code)– Used by ATC to instruct a pilot to stop transponder and ADS–B transmissions, or to turn off only specified functions of the aircraft transponder (military).

(See STOP ALTITUDE SQUAWK.)

(See TRANSPONDER.)

STOP STREAM– Used by ATC to request a pilot to suspend electronic attack activity.

(See JAMMING.)

STOPOVER FLIGHT PLAN– A flight plan format which permits in a single submission the filing of a sequence of flight plans through interim full-stop destinations to a final destination.

STOPWAY– An area beyond the takeoff runway no less wide than the runway and centered upon the extended centerline of the runway, able to support the airplane during an aborted takeoff, without causing structural damage to the airplane, and designated by the airport authorities for use in decelerating the airplane during an aborted takeoff.

TEMPORARY FLIGHT RESTRICTION (TFR)– A TFR is a regulatory action issued by the FAA via the U.S. NOTAM System, under the authority of United States Code, Title 49. TFRs are issued within the sovereign airspace of the United States and its territories to restrict certain aircraft from operating within a defined area on a temporary basis to protect persons or property in the air or on the ground. While not all inclusive, TFRs may be issued for disaster or hazard situations such as: toxic gas leaks or spills, fumes from flammable agents, aircraft accident/incident sites, aviation or ground resources engaged in wildfire suppression, or aircraft relief activities following a disaster. TFRs may also be issued in support of VIP movements, for reasons of national security; or when determined necessary for the management of air traffic in the vicinity of aerial demonstrations or major sporting events. NAS users or other interested parties should contact a FSS for TFR information. Additionally, TFR information can be found in automated briefings, NOTAM publications, and on the internet at <http://www.faa.gov>. The FAA also distributes TFR information to aviation user groups for further dissemination.

TERMINAL AREA– A general term used to describe airspace in which approach control service or airport traffic control service is provided.

TERMINAL AREA FACILITY– A facility providing air traffic control service for arriving and departing IFR, VFR, Special VFR, and on occasion en route aircraft.

(See APPROACH CONTROL FACILITY.)

(See TOWER.)

TERMINAL AUTOMATION SYSTEMS (TAS)– TAS is used to identify the numerous automated tracking systems including STARS and MEARTS.

TERMINAL DATA LINK SYSTEM (TDLS)– A system that provides Digital Automatic Terminal Information Service (D-ATIS) both on a specified radio frequency and also, for subscribers, in a text message via data link to the cockpit or to a gate printer. TDLS also provides Pre-departure Clearances (PDC), at selected airports, to subscribers, through a service provider, in text to the cockpit or to a gate printer. In addition, TDLS will emulate the Flight Data Input/Output (FDIO) information within the control tower.

TERMINAL FLIGHT DATA MANAGER (TFDM)– An integrated tower flight data automation system to provide improved airport surface and terminal airspace management. TFDM enhances traffic flow management data integration with Time-Based Flow Management (TBFM) and Traffic Flow Management System (TFMS) to enable airlines, controllers, and airports to share and exchange real-time data. This improves surface traffic management and enhances capabilities of TFMS and TBFM. TFDM assists the Tower personnel with surface Traffic Flow Management (TFM) and Collaborative Decision Making (CDM) and enables a fundamental change in the Towers from a local airport-specific operation to a NAS-connected metering operation. The single platform consolidates multiple Tower automation systems, including: Departure Spacing Program (DSP), Airport Resource Management Tool (ARMT), Electronic Flight Strip Transfer System (EFSTS), and Surface Movement Advisor (SMA). TFDM data, integrated with other FAA systems such as TBFM and TFMS, allows airlines, controllers, and airports to manage the flow of aircraft more efficiently through all phases of flight from departure to arrival gate.

TERMINAL RADAR SERVICE AREA– Airspace surrounding designated airports wherein ATC provides radar vectoring, sequencing, and separation on a full-time basis for all IFR and participating VFR aircraft. The AIM contains an explanation of TRSA. TRSAs are depicted on VFR aeronautical charts. Pilot participation is urged but is not mandatory.

TERMINAL SEQUENCING AND SPACING (TSAS)– Extends scheduling and metering capabilities into the terminal area and provides metering automation tools to terminal controllers and terminal traffic management personnel. Those controllers and traffic management personnel become active participants in time-based metering operations as they work to deliver aircraft accurately to Constraint Satisfaction Points within terminal airspace to include the runway in accordance with scheduled times at those points. Terminal controllers are better able to utilize efficient flight paths, such as Standard Instrument Approach Procedures (SIAPs) that require a Navigational Specification (NavSpec) of RNP APCH with Radius-to-Fix (RF) legs, or Advanced RNP

(A-RNP), through tools that support the merging of mixed-equipage traffic flows. For example, merging aircraft flying RNP APCH AR with RF, A-RNP, and non-RNP approach procedures. Additional fields in the flight plan will identify those flights capable of flying the RNP APCH with RF or A-RNP procedures, and those flights will be scheduled for those types of procedures when available. TSAS will schedule these and the non-RNP aircraft to a common merge point. Terminal traffic management personnel have improved situation awareness using displays that allow for the monitoring of terminal metering operations, similar to the displays used today by center traffic management personnel to monitor en route metering operations.

TERMINAL VFR RADAR SERVICE– A national program instituted to extend the terminal radar services provided instrument flight rules (IFR) aircraft to visual flight rules (VFR) aircraft. The program is divided into four types service referred to as basic radar service, terminal radar service area (TRSA) service, Class B service and Class C service. The type of service provided at a particular location is contained in the Chart Supplement.

a. Basic Radar Service– These services are provided for VFR aircraft by all commissioned terminal radar facilities. Basic radar service includes safety alerts, traffic advisories, limited radar vectoring when requested by the pilot, and sequencing at locations where procedures have been established for this purpose and/or when covered by a letter of agreement. The purpose of this service is to adjust the flow of arriving IFR and VFR aircraft into the traffic pattern in a safe and orderly manner and to provide traffic advisories to departing VFR aircraft.

b. TRSA Service– This service provides, in addition to basic radar service, sequencing of all IFR and participating VFR aircraft to the primary airport and separation between all participating VFR aircraft. The purpose of this service is to provide separation between all participating VFR aircraft and all IFR aircraft operating within the area defined as a TRSA.

c. Class C Service– This service provides, in addition to basic radar service, approved separation between IFR and VFR aircraft, and sequencing of VFR aircraft, and sequencing of VFR arrivals to the primary airport.

d. Class B Service– This service provides, in addition to basic radar service, approved separation of aircraft based on IFR, VFR, and/or weight, and sequencing of VFR arrivals to the primary airport(s).

(See CONTROLLED AIRSPACE.)

(See TERMINAL RADAR SERVICE AREA.)

(Refer to AIM.)

(Refer to CHART SUPPLEMENT U.S.)

TERMINAL-VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION (TVOR)– A very high frequency terminal omnirange station located on or near an airport and used as an approach aid.

(See NAVIGATIONAL AID.)

(See VOR.)

TERRAIN AWARENESS WARNING SYSTEM (TAWS)– An on-board, terrain proximity alerting system providing the aircrew ‘Low Altitude warnings’ to allow immediate pilot action.

TERRAIN FOLLOWING– The flight of a military aircraft maintaining a constant AGL altitude above the terrain or the highest obstruction. The altitude of the aircraft will constantly change with the varying terrain and/or obstruction.

TETRAHEDRON– A device normally located on uncontrolled airports and used as a landing direction indicator. The small end of a tetrahedron points in the direction of landing. At controlled airports, the tetrahedron, if installed, should be disregarded because tower instructions supersede the indicator.

(See SEGMENTED CIRCLE.)

(Refer to AIM.)

TF–

(See TERRAIN FOLLOWING.)

TFDM–

(See TERMINAL FLIGHT DATA MANAGER.)

TGUI–

(See TIMELINE GRAPHICAL USER INTERFACE.)

THAT IS CORRECT– The understanding you have is right.

THA–

(See TRANSITIONAL HAZARD AREA.)

THE RECREATIONAL UAS SAFETY TEST (TRUST)– The electronically administered free test required for all recreational UAS operators referred to as the aeronautical knowledge and safety test, under 49 USC §44809 (g).

THREE-HOUR TARMAC RULE– Rule that relates to Department of Transportation (DOT) requirements placed on airlines when tarmac delays are anticipated to reach 3 hours.

360 OVERHEAD–

(See OVERHEAD MANEUVER.)

THRESHOLD– The beginning of that portion of the runway usable for landing.

(See AIRPORT LIGHTING.)

(See DISPLACED THRESHOLD.)

THRESHOLD CROSSING HEIGHT– The theoretical height above the runway threshold at which the aircraft's glideslope antenna would be if the aircraft maintains the trajectory established by the mean ILS glideslope or the altitude at which the calculated glidepath of an RNAV or GPS approaches.

(See GLIDESLOPE.)

(See THRESHOLD.)

THRESHOLD LIGHTS–

(See AIRPORT LIGHTING.)

TIE-IN FACILITY– The FSS primarily responsible for providing FSS services, including telecommunications services for landing facilities or navigational aids located within the boundaries of a flight plan area (FPA). Three-letter identifiers are assigned to each FSS/FPA and are annotated as tie-in facilities in the Chart Supplement and FAA Order JO 7350.9, Location Identifiers. Large consolidated FSS facilities may have many tie-in facilities or FSS sectors within one facility.

(See FLIGHT PLAN AREA.)

(See FLIGHT SERVICE STATION.)

TIME-BASED FLOW MANAGEMENT (TBFM)– A foundational Decision Support Tool for time-based management in the en route and terminal environments. TBFM's core function is the ability to schedule aircraft within a stream of traffic to reach a defined constraint point (e.g., meter fix/meter arc) at specified times, creating a time-ordered sequence of traffic. The scheduled times allow for merging of traffic flows, efficiently utilizing airport and airspace capacity while minimizing coordination and reducing the need for vectoring/holding. The TBFM schedule is calculated using current aircraft estimated time of arrival at key defined constraint points based on wind forecasts, aircraft flight plan, the desired separation at the constraint point and other parameters. The schedule applies spacing only when needed to maintain the desired separation at one or more constraint points. This includes, but is not limited to, Single Center Metering (SCM), Adjacent Center Metering (ACM), En Route Departure Capability (EDC), Integrated Departure/Arrival Capability (IDAC), Ground-based Interval Management–Spacing (GIM–S), Departure Scheduling, and Extended/Coupled Metering.

TIME-BASED MANAGEMENT (TBM)– A methodology for managing the flow of air traffic through the assignment of time at specific points for an aircraft. TBM applies time to manage and condition air traffic flows to mitigate demand/capacity imbalances and enhance efficiency and predictability of the NAS. Where implemented, TBM tools will be used to manage traffic even during periods when demand does not exceed capacity. This will sustain operational predictability and assure the regional/national strategic plan is maintained. TBM uses capabilities within TFMS, TBFM, and TFDM. These programs are designed to achieve a specified interval between aircraft. Different types of programs accommodate different phases of flight.

TIME GROUP– Four digits representing the hour and minutes from the Coordinated Universal Time (UTC) clock. FAA uses UTC for all operations. The term “ZULU” may be used to denote UTC. The word “local” or

the time zone equivalent shall be used to denote local when local time is given during radio and telephone communications. When written, a time zone designator is used to indicate local time; e.g., “0205M” (Mountain). The local time may be based on the 24-hour clock system. The day begins at 0000 and ends at 2359.

TIMELINE GRAPHICAL USER INTERFACE (TGUI)– A TBFM display that uses timelines to display the Estimated Time of Arrival and Scheduled Time of Arrival of each aircraft to specified constraint points. The TGUI can also display pre-departure and scheduled aircraft.

TIS-B–

(See **TRAFFIC INFORMATION SERVICE–BROADCAST**.)

TMI–

(See **TRAFFIC MANAGEMENT INITIATIVE**.)

TMPA–

(See **TRAFFIC MANAGEMENT PROGRAM ALERT**.)

TMU–

(See **TRAFFIC MANAGEMENT UNIT**.)

TOD–

(See **TOP OF DESCENT**.)

TODA–

(See **TAKEOFF DISTANCE AVAILABLE**.)

(See ICAO term **TAKEOFF DISTANCE AVAILABLE**.)

TOI–

(See **TRACK OF INTEREST**.)

TOP ALTITUDE– In reference to SID published altitude restrictions, the charted “maintain” altitude contained in the procedure description or assigned by ATC.

TOP OF DESCENT (TOD)– The point at which an aircraft begins the initial descent.

TORA–

(See **TAKEOFF RUN AVAILABLE**.)

(See ICAO term **TAKEOFF RUN AVAILABLE**.)

TORCHING– The burning of fuel at the end of an exhaust pipe or stack of a reciprocating aircraft engine, the result of an excessive richness in the fuel air mixture.

TOS–

(See **TRAJECTORY OPTIONS SET**.)

TOTAL ESTIMATED ELAPSED TIME [ICAO]– For IFR flights, the estimated time required from takeoff to arrive over that designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced, or, if no navigation aid is associated with the destination aerodrome, to arrive over the destination aerodrome. For VFR flights, the estimated time required from takeoff to arrive over the destination aerodrome.

(See ICAO term **ESTIMATED ELAPSED TIME**.)

TOUCH-AND-GO– An operation by an aircraft that lands and departs on a runway without stopping or exiting the runway.

TOUCH-AND-GO LANDING–

(See **TOUCH-AND-GO**.)

TOUCHDOWN–

- a. The point at which an aircraft first makes contact with the landing surface.

b. Concerning a precision radar approach (PAR), it is the point where the glide path intercepts the landing surface.

(See ICAO term TOUCHDOWN.)

TOUCHDOWN [ICAO]– The point where the nominal glide path intercepts the runway.

Note: Touchdown as defined above is only a datum and is not necessarily the actual point at which the aircraft will touch the runway.

TOUCHDOWN RVR–

(See VISIBILITY.)

TOUCHDOWN ZONE– The first 3,000 feet of the runway beginning at the threshold. The area is used for determination of Touchdown Zone Elevation in the development of straight-in landing minimums for instrument approaches.

(See ICAO term TOUCHDOWN ZONE.)

TOUCHDOWN ZONE [ICAO]– The portion of a runway, beyond the threshold, where it is intended landing aircraft first contact the runway.

TOUCHDOWN ZONE ELEVATION– The highest elevation in the first 3,000 feet of the landing surface. TDZE is indicated on the instrument approach procedure chart when straight-in landing minimums are authorized.

(See TOUCHDOWN ZONE.)

TOUCHDOWN ZONE LIGHTING–

(See AIRPORT LIGHTING.)

TOWER– A terminal facility that uses air/ground communications, visual signaling, and other devices to provide ATC services to aircraft operating in the vicinity of an airport or on the movement area. Authorizes aircraft to land or takeoff at the airport controlled by the tower or to transit the Class D airspace area regardless of flight plan or weather conditions (IFR or VFR). A tower may also provide approach control services (radar or nonradar).

(See AIRPORT TRAFFIC CONTROL SERVICE.)

(See APPROACH CONTROL FACILITY.)

(See APPROACH CONTROL SERVICE.)

(See MOVEMENT AREA.)

(See TOWER EN ROUTE CONTROL SERVICE.)

(See ICAO term AERODROME CONTROL TOWER.)

(Refer to AIM.)

TOWER EN ROUTE CONTROL SERVICE– The control of IFR en route traffic within delegated airspace between two or more adjacent approach control facilities. This service is designed to expedite traffic and reduce control and pilot communication requirements.

TOWER TO TOWER–

(See TOWER EN ROUTE CONTROL SERVICE.)

TRACEABLE PRESSURE STANDARD– The facility station pressure instrument, with certification/calibration traceable to the National Institute of Standards and Technology. Traceable pressure standards may be mercurial barometers, commissioned ASOS or dual transducer AWOS, or portable pressure standards or DASI.

TRACK– The actual flight path of an aircraft over the surface of the earth.

(See COURSE.)

(See FLIGHT PATH.)

(See ROUTE.)

(See ICAO term TRACK.)

TRACK [ICAO]– The projection on the earth's surface of the path of an aircraft, the direction of which path at any point is usually expressed in degrees from North (True, Magnetic, or Grid).

TRACK OF INTEREST (TOI)– Displayed data representing an airborne object that threatens or has the potential to threaten North America or National Security. Indicators may include, but are not limited to: noncompliance with air traffic control instructions or aviation regulations; extended loss of communications; unusual transmissions or unusual flight behavior; unauthorized intrusion into controlled airspace or an ADIZ; noncompliance with issued flight restrictions/security procedures; or unlawful interference with airborne flight crews, up to and including hijack. In certain circumstances, an object may become a TOI based on specific and credible intelligence pertaining to that particular aircraft/object, its passengers, or its cargo.

TRACK OF INTEREST RESOLUTION– A TOI will normally be considered resolved when: the aircraft/object is no longer airborne; the aircraft complies with air traffic control instructions, aviation regulations, and/or issued flight restrictions/security procedures; radio contact is re-established and authorized control of the aircraft is verified; the aircraft is intercepted and intent is verified to be nonthreatening/nonhostile; TOI was identified based on specific and credible intelligence that was later determined to be invalid or unreliable; or displayed data is identified and characterized as invalid.

TRAFFIC–

a. A term used by a controller to transfer radar identification of an aircraft to another controller for the purpose of coordinating separation action. Traffic is normally issued:

- 1.** In response to a handoff or point out,
- 2.** In anticipation of a handoff or point out, or
- 3.** In conjunction with a request for control of an aircraft.

b. A term used by ATC to refer to one or more aircraft.

TRAFFIC ADVISORIES– Advisories issued to alert pilots to other known or observed air traffic which may be in such proximity to the position or intended route of flight of their aircraft to warrant their attention. Such advisories may be based on:

- a.** Visual observation.
- b.** Observation of radar identified and nonidentified aircraft targets on an ATC radar display, or
- c.** Verbal reports from pilots or other facilities.

Note 1: The word “traffic” followed by additional information, if known, is used to provide such advisories; e.g., “Traffic, 2 o’clock, one zero miles, southbound, eight thousand.”

Note 2: Traffic advisory service will be provided to the extent possible depending on higher priority duties of the controller or other limitations; e.g., radar limitations, volume of traffic, frequency congestion, or controller workload. Radar/ nonradar traffic advisories do not relieve the pilot of his/her responsibility to see and avoid other aircraft. Pilots are cautioned that there are many times when the controller is not able to give traffic advisories concerning all traffic in the aircraft’s proximity; in other words, when a pilot requests or is receiving traffic advisories, he/she should not assume that all traffic will be issued.

(Refer to AIM.)

TRAFFIC ALERT (aircraft call sign), TURN (left/right) IMMEDIATELY, (climb/descend) AND MAINTAIN (altitude).

(See SAFETY ALERT.)

TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM (TCAS)– An airborne collision avoidance system based on radar beacon signals which operates independent of ground-based equipment. TCAS-I generates traffic advisories only. TCAS-II generates traffic advisories, and resolution (collision avoidance) advisories in the vertical plane.

TRAFFIC INFORMATION–

(See TRAFFIC ADVISORIES.)

TRAFFIC INFORMATION SERVICE–BROADCAST (TIS-B)– The broadcast of ATC derived traffic information to ADS-B equipped (1090ES or UAT) aircraft. The source of this traffic information is derived from

U

UAM–

(See URBAN AIR MOBILITY.)

UAS FACILITY MAP (UASFM)– Defined grid squares showing maximum altitudes around airports where the FAA may authorize Part 107 sUAS operations without additional safety analysis. The maps should be consulted prior to conducting UAS operations (Part 91, Part 107 or Section 44809) in controlled airspace. The UASFM will aid in determining if the airspace authorization or waivers are necessary. UASFM(s) are charted on the UAS Data Delivery System (UDDS) at the following website address: <https://faa.maps.arcgis.com/apps/webappviewer/index.html?id=9c2e4406710048e19806ebf6a06754ad>.

UAS TEST SITE– Independently owned UAS test & research sites, recognized by the FAA.

UAS TRAFFIC MANAGEMENT (UTM)–The unmanned aircraft traffic management ecosystem that will allow multiple low altitude BVLOS operations and which is separate from, but complementary to, FAA's Air Traffic Control System.

UASFM–

(See UAS FACILITY MAP.)

UHF–

(See ULTRAHIGH FREQUENCY.)

ULTRAHIGH FREQUENCY (UHF)– The frequency band between 300 and 3,000 MHz. The bank of radio frequencies used for military air/ground voice communications. In some instances this may go as low as 225 MHz and still be referred to as UHF.

ULTRALIGHT VEHICLE– A single-occupant aeronautical vehicle operated for sport or recreational purposes which does not require FAA registration, an airworthiness certificate, or pilot certification. Operation of an ultralight vehicle in certain airspace requires authorization from ATC.

(Refer to 14 CFR Part 103.)

UNABLE– Indicates inability to comply with a specific instruction, request, or clearance.

UNASSOCIATED– A radar target that does not display a data block with flight identification and altitude information.

(See ASSOCIATED.)

UNCONTROLLED AIRSPACE– Airspace in which aircraft are not subject to controlled airspace (Class A, B, C, D, or E) separation criteria.

UNDER THE HOOD– Indicates that the pilot is using a hood to restrict visibility outside the cockpit while simulating instrument flight. An appropriately rated pilot is required in the other control seat while this operation is being conducted.

(Refer to 14 CFR Part 91.)

UNFROZEN– The Scheduled Time of Arrival (STA) tags, which are still being rescheduled by the time-based flow management (TBFM) calculations. The aircraft will remain unfrozen until the time the corresponding estimated time of arrival (ETA) tag passes the preset freeze horizon for that aircraft's stream class. At this point the automatic rescheduling will stop, and the STA becomes "frozen."

UNICOM– A nongovernment communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOMs are shown on aeronautical charts and publications.

(See CHART SUPPLEMENT.)

(Refer to AIM.)

UNMANNED AIRCRAFT (UA)- A device used or intended to be used for flight that has no onboard pilot. This device can be any type of airplane, helicopter, airship, or powered-lift aircraft. Unmanned free balloons, moored balloons, tethered aircraft, gliders, and unmanned rockets are not considered to be a UA.

UNMANNED AIRCRAFT SYSTEM (UAS)- An unmanned aircraft and its associated elements related to safe operations, which may include control stations (ground, ship, or air based), control links, support equipment, payloads, flight termination systems, and launch/recovery equipment. It consists of three elements: unmanned aircraft, control station, and data link.

UNPUBLISHED ROUTE- A route for which no minimum altitude is published or charted for pilot use. It may include a direct route between NAVAIDs, a radial, a radar vector, or a final approach course beyond the segments of an instrument approach procedure.

(See PUBLISHED ROUTE.)

(See ROUTE.)

UNRELIABLE (GPS/WAAS)- An advisory to pilots indicating the expected level of service of the GPS and/or WAAS may not be available. Pilots must then determine the adequacy of the signal for desired use.

UNSERVICEABLE (U/S)

(See OUT OF SERVICE/UNSERVICEABLE.)

UPWIND LEG-

(See TRAFFIC PATTERN.)

URBAN AIR MOBILITY (UAM)- A subset of Advanced Air Mobility (AAM), referring to an air transportation system utilizing highly automated aircraft to transport passengers or cargo in urban/suburban areas.

URGENCY- A condition of being concerned about safety and of requiring timely but not immediate assistance; a potential distress condition.

(See ICAO term URGENCY.)

URGENCY [ICAO]- A condition concerning the safety of an aircraft or other vehicle, or of person on board or in sight, but which does not require immediate assistance.

USAFIB-

(See ARMY AVIATION FLIGHT INFORMATION BULLETIN.)

UTM-

(See UAS TRAFFIC MANAGEMENT.)

VORTICES– Circular patterns of air created by the movement of an airfoil through the air when generating lift. As an airfoil moves through the atmosphere in sustained flight, an area of low pressure is created above it. The air flowing from the high pressure area to the low pressure area around and about the tips of the airfoil tends to roll up into two rapidly rotating vortices, cylindrical in shape. These vortices are the most predominant parts of aircraft wake turbulence and their rotational force is dependent upon the wing loading, gross weight, and speed of the generating aircraft. The vortices from medium to super aircraft can be of extremely high velocity and hazardous to smaller aircraft.

(See AIRCRAFT CLASSES.)

(See WAKE TURBULENCE.)

(Refer to AIM.)

VOT– A ground facility which emits a test signal to check VOR receiver accuracy. Some VOTs are available to the user while airborne, and others are limited to ground use only.

(See CHART SUPPLEMENT.)

(Refer to 14 CFR Part 91.)

(Refer to AIM.)

VR–

(See VFR MILITARY TRAINING ROUTES.)

VSCS–

(See VOICE SWITCHING AND CONTROL SYSTEM.)

VTOL AIRCRAFT–

(See VERTICAL TAKEOFF AND LANDING AIRCRAFT.)

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BRIEFING GUIDE

**U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

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1. PARAGRAPH NUMBER AND TITLE:

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

3-10-5. LANDING CLEARANCE

3-10-10. ALTITUDE RESTRICTED LOW APPROACH

2. BACKGROUND: United States Air Force (USAF) submitted a Document Change Proposal (DCP) in early 2023 to amend FAA Order JO 7110.65, Air Traffic Control, paragraph 3-9-4, Line Up and Wait (LUAW), for improved clarity.

3. CHANGE:**OLD****3-9-4. LINE UP AND WAIT (LUAW)****Title through b NOTE****c. Procedures.**

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

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

PHRASEOLOGY-

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

or

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

EXAMPLE-

“American 528, Runway Two-Three continue, traffic holding in position.”

“Twin Cessna Four Four Golf, Runway One-Niner Right, base approved, traffic holding in position.”

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

Add

(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:

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

No Change

No Change

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

(a) Do not clear an aircraft for a full-stop, touch-and-go, stop-and-go, low approach, or option on the same runway with an aircraft holding in position or taxiing to LUAW until the aircraft in position has exited the runway or starts takeoff roll.

No Change

No Change

REFERENCE-

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

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

No Change

(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 through k2

1. 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.

OLD

3–10–5. LANDING CLEARANCE

Title through b2 **REFERENCE**

c. 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.

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

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

No Change

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

No Change

No Change

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

No Change

No Change

NEW

3–10–5. LANDING CLEARANCE

No Change

No Change

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

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

d. 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.”

OLD

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.*

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

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

No Change

NEW

3–10–10. ALTITUDE RESTRICTED LOW APPROACH

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

No Change

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

PHRASEOLOGY–

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

No Change

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*.

No Change

1. PARAGRAPH NUMBER AND TITLE:

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

3–10–4. INTERSECTING RUNWAY/INTERSECTING FLIGHT PATH SEPARATION

2. BACKGROUND: Recent inquiries from the Western Service Center Operations Support Group (OSG) concerning Land and Hold Short Operations (LAHSO) indicated misalignment between the current LAHSO order and the content in FAA Order JO 7110.65 regarding intersecting runway operations.

3. CHANGE:**OLD**

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

Title through **b2(b)**

Add

(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*.

NEW

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

No Change

(c) Has landed and will hold short of an intersecting runway, intersecting taxiway, intersecting approach/departure flight path, or other predetermined point in accordance with the Land and Hold Short Operations (LAHSO) directive, or

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

(e) Has passed the intersection.

REFERENCE–

FAA Order 7110.118, Land and Hold Short Operations (LAHSO).

P/CG Term – *Clear of the Runway*.

P/CG Term – *Landing Roll*.

OLD

**3–10–4. INTERSECTING
 RUNWAY/INTERSECTING FLIGHT PATH
 SEPARATION**

Title through **a(2)** **REFERENCE**

NEW

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

No Change

b. “USA/USAF/USN NOT APPLICABLE.” An aircraft may be authorized to takeoff from one runway while another aircraft lands simultaneously on an intersecting runway or an aircraft lands on one runway while another aircraft lands simultaneously on an intersecting runway, or an aircraft lands to hold short of an intersecting taxiway or some other predetermined point such as an approach/departure flight path using procedures specified in the current LAHSO directive. The procedure must be approved by the air traffic manager and be in accordance with a facility directive. The following conditions apply:

NOTE–

Application of these procedures does not relieve controllers from the responsibility of providing other appropriate separation contained in this order.

REFERENCE–

FAA Order JO 7210.3, Para 10–3–7, Land and Hold Short Operations (LAHSO).

b. “USA/USAF/USN NOT APPLICABLE.” An **arriving** aircraft may be authorized to **land and hold short of an intersecting runway, an intersecting taxiway, an intersecting approach/departure flight path, or other predetermined point in accordance with** procedures specified in the LAHSO directive. The following conditions apply:

No Change

REFERENCE–

FAA Order 7110.118, Land and Hold Short Operations (LAHSO).
FAA Order JO 7210.3, Para 10–3–7, Land and Hold Short Operations (LAHSO).

1. PARAGRAPH NUMBER AND TITLE: 5–1–2. ATC SURVEILLANCE SOURCE USE

2. BACKGROUND: Recently, a clarification was issued by Mission Support Services, Policy, AJV–P, to answer questions concerning the ongoing divestiture of select radar site assets. The clarification identified a potential ambiguity related to existing guidance regarding the use of approved ATC surveillance sources. This change is necessary to update the order and account for newer technologies adopted into the NAS within the past decade.

3. CHANGE:

OLD

5–1–2. ATC SURVEILLANCE SOURCE USE

Use approved ATC Surveillance Sources.

REFERENCE–

FAA Order JO 7110.65, Para 5–2–13, Inoperative or Malfunctioning Interrogator.

NEW

5–1–2. ATC SURVEILLANCE SOURCE USE

Use approved ATC surveillance sources. **TERMINAL. When operating in FUSION mode, the provisions of 5–1–2a are not applicable, unless required by facility directive.**

No Change

1. PARAGRAPH NUMBER AND TITLE: 5–2–11. CODE MONITOR

2. BACKGROUND: In April 2023, a note was added to FAA Order JO 7110.65 dedicating beacon code 1203 for use by the lead aircraft of visual flight rules (VFR) standard formation flights not in contact with Air Traffic Control (ATC). This code should also have been added to paragraph 5–2–11 containing the list of codes that are specifically monitored by ATC.

3. CHANGE:**OLD****5-2-11. CODE MONITOR**

a. Continuously monitor the codes assigned to aircraft operating within your area of responsibility. Additionally, monitor **Code 1200, Code 1202, Code 1255, and Code 1277** unless your area of responsibility includes only Class A airspace. During periods when ring-around or excessive VFR target presentations derogate the separation of IFR traffic, the monitoring of VFR Code 1200, Code 1202, Code 1255, and Code 1277 may be temporarily discontinued.

NEW**5-2-11. CODE MONITOR**

a. Continuously monitor the codes assigned to aircraft operating within your area of responsibility. Additionally, monitor Code 1200, Code 1202, **Code 1203**, Code 1255, and Code 1277 unless your area of responsibility includes only Class A airspace. During periods when excessive VFR target presentations derogate the separation of IFR traffic, monitoring of **the aforementioned codes** may be temporarily discontinued.

1. PARAGRAPH NUMBER AND TITLE:**5-2-15. VALIDATION OF MODE C ALTITUDE READOUT**

2. BACKGROUND: The guidance in FAA Order JO 7110.65, 5-2-15e and 5-2-15f, directs the action to be taken when an aircraft displays an invalid Mode C readout, depending on the altitude stratum the aircraft is within. The subparagraphs provide direction to controllers for handling aircraft with invalid Mode C readouts when operating either below or at or above FL 180 and not solely on the Mode C readout.

3. CHANGE:**OLD****5-2-15. VALIDATION OF MODE C ALTITUDE READOUT**

Title through c

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

d1 through d2(b) *PHRASEOLOGY*

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

NEW**5-2-15. VALIDATION OF MODE C ALTITUDE READOUT**

No Change

d. Whenever you observe an **aircraft below FL 180 with an invalid Mode C readout**:

No Change

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

1. PARAGRAPH NUMBER AND TITLE: 5-7-2. METHODS

2. BACKGROUND: In 1990, FAA Order JO 7110.65F, CHG 4, paragraph 5-101, Methods, inserted a speed adjustment example “reduce speed twenty knots” without any reference to expressing numbers in group form in the paragraph. As a result, there was no clear guidance on when speed adjustments must be expressed in single digit or group form.

3. CHANGE:**OLD****5-7-2. METHODS**

Title through a3

NEW**5-7-2. METHODS**

No Change

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.

4. Increase or reduce to a specified speed **in single-digit form** or by a specified number of knots **in group form**.

No Change

No Change

No Change

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.)*

No Change

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.*

No Change

1. PARAGRAPH NUMBER AND TITLE:

8–1–10. PROCEDURES FOR WEATHER DEVIATIONS AND OTHER CONTINGENCIES IN OCEANIC CONTROLLED AIRSPACE

8–7–5. PROCEDURES FOR WEATHER DEVIATIONS IN NORTH ATLANTIC (NAT) AIRSPACE

8–9–5. PROCEDURES FOR WEATHER DEVIATIONS AND OTHER CONTINGENCIES IN OCEANIC CONTROLLED AIRSPACE

2. **BACKGROUND:** During a recent review of FAA Order JO 7110.65, Chapter 8, Offshore/Oceanic Procedures, it was discovered that procedures for weather deviations were omitted from two of the four ICAO Regions. Weather deviation requests take priority over routine requests regardless of region, and no matter the region, aircraft will not fly into known areas of weather.

3. CHANGE:

OLD

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NEW

8–1–10. PROCEDURES FOR WEATHER DEVIATIONS AND OTHER CONTINGENCIES IN OCEANIC CONTROLLED AIRSPACE

Aircraft must request an ATC clearance to deviate. Since aircraft will not fly into adverse meteorological conditions, weather deviation requests should take priority over routine requests. If there is no traffic in the horizontal dimension, ATC must issue clearance to deviate from track; or if there is conflicting traffic in the horizontal dimension, ATC must separate aircraft by establishing vertical separation, then issue clearance to deviate from track. If there is conflicting traffic and ATC is unable to establish required separation, ATC must:

a. Advise the pilot unable to issue clearance for requested deviation;

b. Advise the pilot of conflicting traffic; and

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c. Request pilot's intentions.**PHRASEOLOGY–****UNABLE (requested deviation), TRAFFIC IS (call sign, position, altitude, direction), SAY INTENTIONS.****NOTE–****1. The pilot will advise ATC of intentions by the most expeditious means available.****2. In the event that pilot/controller communications cannot be established or a revised ATC clearance is not available, pilots will follow the procedures outlined in the Aeronautical Information Publication (AIP), Section ENR 7.3, Special Procedures for In-flight Contingencies in Oceanic Airspace; and AC 91-70, Oceanic and Remote Continental Airspace Operations.****OLD****8-7-5. PROCEDURES FOR WEATHER DEVIATIONS IN NORTH ATLANTIC (NAT) AIRSPACE**

Aircraft must request an ATC clearance to deviate. Since aircraft will not fly into known areas of weather, weather deviation requests should take priority over routine requests. If there is no traffic in the horizontal dimension, ATC must issue clearance to deviate from track; or if there is conflicting traffic in the horizontal dimension, ATC separates aircraft by establishing vertical separation. If there is conflicting traffic and ATC is unable to establish the required separation, ATC must:

a. Advise the pilot unable to issue clearance for requested deviation;

b. Advise the pilot of conflicting traffic; and

c. Request pilot's intentions.

PHRASEOLOGY–**UNABLE (requested deviation), TRAFFIC IS (call sign, position, altitude, direction), ADVISE INTENTIONS.****NOTE–****1. The pilot will advise ATC of intentions by the most expeditious means available.****2. In the event that pilot/controller communications cannot be established or a revised ATC clearance is not available, pilots will follow the procedures outlined in the Regional Supplementary Procedures, ICAO Doc. 7030.****NEW**

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**8-9-5 PROCEDURES FOR WEATHER
DEVIATIONS AND OTHER
CONTINGENCIES IN OCEANIC
CONTROLLED AIRSPACE**

Aircraft must request an ATC clearance to deviate. Since aircraft will not fly into known areas of weather, weather deviation requests should take priority over routine requests. If there is no traffic in the horizontal dimension, ATC must issue clearance to deviate from track; or if there is conflicting traffic in the horizontal dimension, ATC separates aircraft by establishing vertical separation. If there is conflicting traffic and ATC is unable to establish approved separation, ATC must:

a. Advise the pilot unable to issue clearance for requested deviation;

b. Advise the pilot of conflicting traffic; and

c. Request pilot's intentions.

PHRASEOLOGY-

UNABLE (requested deviation), TRAFFIC IS (call sign, position, altitude, direction), SAY INTENTIONS.

NOTE-

1. The pilot will advise ATC of intentions by the most expeditious means available.

2. In the event that pilot/controller communications cannot be established or a revised AT clearance is not available, pilots will follow the procedures outlined in the Regional Supplementary Procedures, ICAO Doc 7030 and Chart Supplements.

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1. PARAGRAPH NUMBER AND TITLE: 9-2-5. FLYNET

2. BACKGROUND: The agency now responsible for nuclear/radiological emergencies, the Department of Energy (DOE), has provided updated information on the use of the code word FLYNET and how the code word is used.

3. CHANGE:

OLD

9-2-5. FLYNET

Provide expeditious handling for U.S. Government, civil or military aircraft using the code name "FLYNET." Relay the code name as an element in the remarks position of the flight plan.

Add

NEW

9-2-5. FLYNET

ATC personnel at the first facility establishing contact with an aircraft using the code **word** FLYNET **must:**

a. Provide expeditious handling.

Add

b. Report it to the operations supervisor (OS)/controller-in-charge (CIC), for reporting to the National Tactical Security Operations (NTSO) Air Traffic Security Coordinator (ATSC) through the Domestic Events Network (DEN).

Add

c. Add to the remarks section of the flight plan that DEN notification has been accomplished.

NOTE–

The code name “FLYNET” indicates that an aircraft is transporting a nuclear emergency team or a disaster control team to the location of a potential or actual nuclear accident or an accident involving chemical agents or hazardous materials. It is in the public interest that they reach their destination as rapidly as possible.

NOTE–

The code word FLYNET indicates that an aircraft is transporting a nuclear emergency support team or other disaster response teams to a potential or actual nuclear/radiological incident, or to a potential or actual incident involving dangerous chemical agents or other hazardous materials. It is in the public interest that they reach their destination as rapidly as possible.

Add

EXAMPLE–

“Miami Center, Energy One Two FLYNET, request clearance direct Dulles.”

REFERENCE–

FAA Order JO 7110.65, Para 2–1–4, Operational Priority.
FAA Order JO 7610.4, Para 9–4–1, “FLYNET” Flights, Nuclear Emergency Teams.

REFERENCE–

FAA Order JO 7110.65, Para 2–1–4, Operational Priority.
FAA Order JO 7610.4, Para 9–4–1, FLYNET Flights, Nuclear Emergency Support Teams.
