CHANGE

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

JO 7110.65Z
CHG 2

Effective Date:
May 19, 2022

SUBJ: Air Traffic Control

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

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

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

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

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

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 Retain this transmittal until superseded by a new basic order.

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

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Explanation of Changes
Change 2

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

a. 1–2–1. WORD MEANINGS

This change separates the pilot's individual responsibilities listed in the first paragraph from a joint controller/pilot responsibility listed in a subsequent paragraph.

b. 2–1–13. FORMATION FLIGHTS

This change corrects the requirement to use non–RVSM separation standards at or above FL 290, rather than only above FL 290.

c. 2–6–4. ISSUING WEATHER AND CHAFF AREAS

The phrase "lateral deviation area" will be replaced with existing language from the AIM used when issuing weather and chaff areas. This will harmonize JO 7110.65 with the AIM using consistent, plain language.

d. 4–4–3. DEGREE–DISTANCE ROUTE DEFINITION FOR MILITARY OPERATIONS

This change will replace airways and jet routes with Air Traffic Service routes, which encompass airways, jet routes, Area Navigation (RNAV) routes, and colored federal airways.

e. 5–1–4. MERGING TARGET PROCEDURES

This change updates JO 7110.65, paragraph 5–1–4, Merging Target Procedures, with current and correct examples that illustrate how merging target procedures should be applied. This change also adds a reference to paragraph 2–4–21, Description of Aircraft Types, and makes some minor editorial corrections.

f. 5–1–9. RADAR SERVICE TERMINATION
5–9–7. SIMULTANEOUS INDEPENDENT APPROACHES– DUAL & TRIPLE
5–9–9. SIMULTANEOUS OFFSET INSTRUMENT APPROACHES (SOIA)
5–12–4. GLIDEPATH AND COURSE INFORMATION
5–13–1. MONITOR ON PAR EQUIPMENT
5–13–2. MONITOR AVAILABILITY
5–13–3. MONITOR INFORMATION

This change removes Chapter 5, Section 13, from the order in its entirety, and removes any other references to it wherever they appear.

g. 5–2–22. INOPERATIVE OR MALFUNCTIONING ADS–B TRANSMITTER

This change clarifies that DoD aircraft are excluded from the controller requirement to notify pilots of an apparently inoperative or malfunctioning ADS–B transmitter. This change also adds a note describing what constitutes an inoperative or malfunctioning ADS–B for the purpose of forwarding to FAA Flight Standards, and adds supporting references. This change cancels and incorporates N JO 7110.781, which was effective March 1, 2022.

h. 7–4–3. CLEARANCE FOR VISUAL APPROACH

This change relocates and reorganizes prescribed phraseology for visual approach clearances at locations with an operating control tower and non–towered locations. This change also adds content that articulates the historical practice of not issuing a runway number when clearing aircraft for visual approaches to non–towered airports that has been missing and clarifies that cleared aircraft instructed to follow a preceding aircraft does follow it to the same landing runway.

i. 10–2–6. HIJACKED AIRCRAFT

This change provides non–sensitive, basic operational guidance for air traffic controllers to follow in the event they become aware of an actual or suspected hijacking. Detailed hijack guidance is contained in FAA Order JO 7610.4, Special Operations, which describes additional procedures and reporting requirements that must be followed.

j. 10–5–2. DEBRIS–GENERATING SPACE LAUNCH OR REENTRY VEHICLE MISHAPS

This change adds a paragraph to FAA Order JO 7110.65 that establishes a space vehicle mishap as an emergency situation, and provides guidance for controllers containing example language for aircraft notification and actionable responses. This change cancels and incorporates N JO 7110.782, which was effective April 19, 2022.

k. Editorial Changes

Editorial changes include grammatical fixes to multiple paragraphs, revisions to FIG 8–5–3, a grammatical fix in paragraph 2–3–5, a reference update in paragraph 4–8–1, a grammatical fix to paragraph 5–1–4, adjusting the language in a NOTE in paragraph 2–2–6a11, adding a hyphen to fixed–wing in paragraphs 7–5–3 and 7–5–7, correcting a spelling of NAVAIDs in subparagraph 4–4–1d, removal of LOA in paragraph 5–4–9, removal of an obsolete note in subparagraph 2–6–6a, and a reference correction in paragraph 8–1–7.

l. Entire publication

Additional editorial/format changes were made where necessary. Revision bars were not used because of the insignificant nature of these changes.

PAGE CONTROL CHART

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Section 2. Terms of Reference

1–2–1. WORD MEANINGS

As used in this order:

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

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

c. "Should" means a procedure is recommended.

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

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

f. Singular words include the plural.

g. Plural words include the singular.

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

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

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

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

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

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

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

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

1. Obligates the authorized state aircraft commander to:

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

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

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

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

(2) Within radar surveillance and radio communications of a surface radar facility; or

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

(4) Operate within Class G airspace.

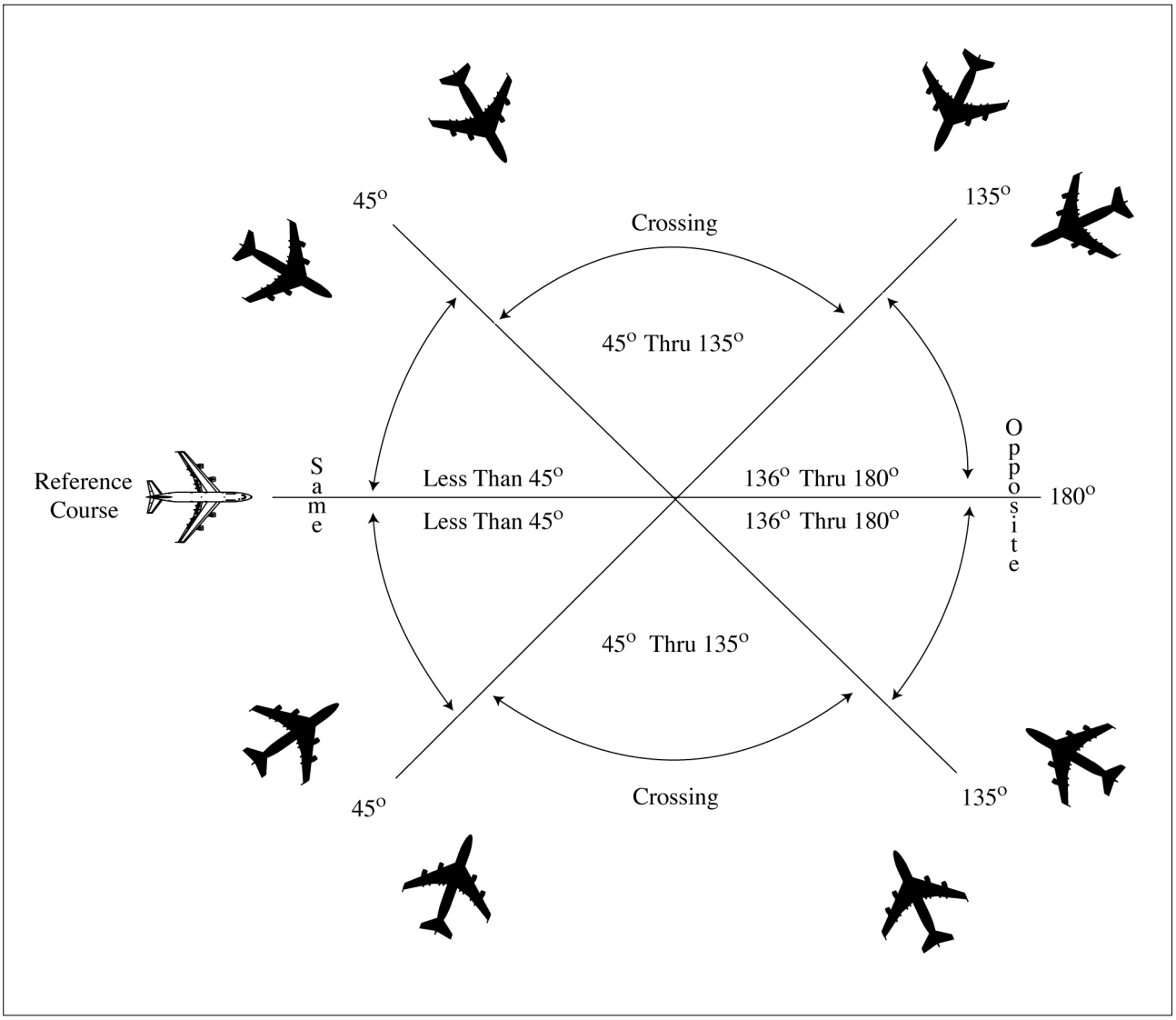
2. An understanding between the pilot and controller regarding the intent of the pilot and the status of the flight should be reached before the aircraft leaves ATC frequency.

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

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

p. "CFR" means Code of Federal Regulations.

FIG 1–2–1
Divergence



1–2–2. COURSE DEFINITIONS

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

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

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

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

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

1–2–3. NOTES

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

CLIMB/DESCEND (specific altitude if appropriate) IMMEDIATELY.

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

REFERENCE–
FAA Order JO 7110.65, Para 5–13–1, 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.

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

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

5. If continued malfunction is reported after the standby equipment is activated or the standby equipment cannot be activated, inform technical operations personnel and request advice on whether

or not the aid should be shut down. In the absence of a second aircraft report, advise the technical operations personnel of the time of the initial aircraft report and the estimated time a second aircraft report could be obtained.

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

1. Record the following minimum information:

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

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

(c) Date/time of occurrence.

2. Request a report from a second aircraft.

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

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

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

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

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

2−1−11. USE OF MARSA

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

NOTE−
Application of MARSA is a military command prerogative. It will not be invoked indiscriminately by individual units or pilots. It will be used only for IFR operations requiring its use. Commands authorizing MARSA will ensure that its implementation and terms of use are documented and coordinated with the control agency having jurisdiction over the area in which the operations are conducted. Terms of use will assign responsibility and provide for separation among participating aircraft.

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

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

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

2−1−12. MILITARY PROCEDURES

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

a. ATC facilities operated by that military service.

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

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

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

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

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

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

REFERENCE−
FAA Order JO 7110.65, Para 1−2−5, Annotations.

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

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

2–1–13. FORMATION FLIGHTS

Control formation flights as a single aircraft. Separation responsibility between aircraft within the formation rests with the flight leader and the pilots of the other aircraft in the flight. This includes transition periods when aircraft within the formation are maneuvering to attain separation from each other to effect individual control during join–up and breakaway.

REFERENCE–
P/CG Term – Formation Flight
FAA Order JO 7610.4, Chapter 12, Section 11. Formation Flight
ICAO Annex 2, 3.1.8 Formation Flights

a. Support formation flight join–up for two aircraft when all of the following occur:

1. Requested by any participating pilot.

2. All participating pilots concur.

3. Either of the participating pilots reports the other/s in sight.

EXAMPLE–
"ROOK01 has EAGLE03 in sight, request formation join–up with EAGLE03 at flight level two zero zero. EAGLE03 will be the lead."

"EAGLE03 verify requesting flight join–up with ROOK01."

If affirmative:

"ROOK01 climb and maintain flight level two zero zero. Report (advise) when formation join–up is complete."

b. If multiple single aircraft request to join–up, multiple formations are joining as one, or aircraft are joining an established formation, obtain confirmation of required items listed in subparagraph 2–1–13a, from the lead aircraft.

REFERENCE–
P/CG Term – Formation Flight

c. After join–up, aircraft beacon code assignment will be determined by formation type.

1. For a standard formation only the aircraft acting as the lead will squawk an ATC assigned beacon code. Ensure all other aircraft squawk standby.

2. For a nonstandard formation, each aircraft should squawk an ATC assigned beacon code. Controller discretion allows aircraft in a nonstandard formation to squawk standby if operationally advantageous.

REFERENCE–
FAA Order JO 7610.4, Para 12–11–6, Nonstandard Formation Tactics, subparagraph b3.

EXAMPLE–
"N123JP squawk standby."

Or

"N123SP have N123JP squawk standby."

d. When formation break–up is requested, issue control instructions and/or clearances which will result in approved separation through the lead or directly to the requesting aircraft in the formation.

EXAMPLE–
"N5871S requesting flight break–up with N731K. N731K is changing destination to PHL."
"N731K squawk 5432, turn right, fly heading zero–seven–zero.

"Center, BAMA21. BAMA23 is requesting to RTB."
"BAMA21 have BAMA23 squawk 5544, descend and maintain flight level one–niner–zero and change to my frequency."

"Center, BAMA21. BAMA23 is requesting to RTB."
"BAMA23 squawk 5544. BAMA23 Radar contact (position if required). Cleared to SSC via direct. Descend and maintain flight level one–niner–zero."

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

e. Military and civil formation flights in RVSM airspace.

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

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

3. If aircraft are requesting to form a formation flight to FL 290 or above, the controller who issues

the clearance creating the formation flight is responsible for ensuring that the proper equipment suffix is entered for the lead aircraft.

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

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

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

2–1–14. COORDINATE USE OF AIRSPACE

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

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

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

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

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

2–1–15. CONTROL TRANSFER

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

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

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

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

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

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

2–1–16. SURFACE AREAS

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

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

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

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

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

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

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

2–1–24. TRANSFER OF POSITION RESPONSIBILITY

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

2–1–25. WHEELS DOWN CHECK

USA/USN

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

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

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

PHRASEOLOGY–
CHECK WHEELS DOWN.

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

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

2. To aircraft conducting instrument approaches and remaining on the radar facility's frequency, before the aircraft passes the outer marker/final approach fix.

PHRASEOLOGY–
WHEELS SHOULD BE DOWN.

2–1–26. SUPERVISORY NOTIFICATION

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

a. Weather.

b. Equipment status.

c. Potential sector overload.

d. Emergency situations.

e. Special flights/operations.

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

REFERENCE–
P/CG Term – Suspicious UAS.

2–1–27. PILOT DEVIATION NOTIFICATION

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

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

REFERENCE–
FAA Order JO 8020.16, Air Traffic Organization Aircraft Accident and Aircraft Incident Notification, Investigation, and Reporting, Chapter 11, Para 3, Air Traffic Facility Responsibilities.

2–1–28. TCAS RESOLUTION ADVISORIES

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

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

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

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

c. Once the responding aircraft has begun a maneuver in response to an RA, the controller is not

responsible for providing approved separation between the aircraft that is responding to an RA and any other aircraft, airspace, terrain or obstructions. Responsibility for approved separation resumes when one of the following conditions is met:

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

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

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

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

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

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

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

2–1–29. RVSM OPERATIONS

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

a. Non–RVSM aircraft operating in RVSM airspace.

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

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

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

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

b. Non–RVSM aircraft transitioning RVSM airspace.

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

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

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

EXAMPLE–
"Point out Baxter1 climbing to FL 360, negative RVSM."

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

1. To deny clearance into RVSM airspace.

PHRASEOLOGY–
"UNABLE CLEARANCE INTO RVSM AIRSPACE."

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

PHRASEOLOGY–
"REPORT ABLE TO RESUME RVSM."

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

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

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

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

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

REFERENCE–
FAA Order JO 7110.65, Para 4–5–1, Vertical Separation Minima.
FAA Order JO 7110.65, Para 2–3–8, Aircraft Equipment Suffix.
14 CFR Section 91.215 ATC Transponder and Altitude Reporting Equipment and Use.
Advisory Circular AC 91–85B, Authorization of Aircraft and Operators for Flight in Reduced Vertical Separation Minimum (RVSM) Airspace.

2–1–30. TERRAIN AWARENESS WARNING SYSTEM (TAWS) ALERTS

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

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

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

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

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

2–1–31. "BLUE LIGHTNING" EVENTS

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

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, 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 2–2–11, Forwarding Amended and UTM Data.

12. Longitudinal separation being used in non–radar 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).

13. Any additional nonroutine operational information pertinent to flight safety.

NOTE–
EN ROUTE. This includes alerting the receiving controller that the flight is conducting celestial navigation training.

REFERENCE–
FAA Order JO 7110.65, Para 9–2–2, Celestial Navigation Training.

b. Forward position report over last reporting point in the transferring facility's area if any of the following conditions exist:

1. Time differs more than 3 minutes from estimate given.

2. Requested by receiving facility.

3. Agreed to between facilities.

2–2–7. MANUAL INPUT OF COMPUTER-ASSIGNED BEACON CODES

When a flight plan is manually entered into the computer and a computer-assigned beacon code has been forwarded with the flight plan data, insert the beacon code in the appropriate field as part of the input message.

2–2–8. ALTRV INFORMATION

EN ROUTE

When an aircraft is a part of an approved ALTRV, forward only those items necessary to properly identify the flight, update flight data contained in the ALTRV APVL, or revise previously given information.

2–2–9. COMPUTER MESSAGE VERIFICATION

EN ROUTE

Unless your facility is equipped to automatically obtain acknowledgment of receipt of transferred data, when you transfer control information by computer message, obtain, via Service F, acknowledgment that the receiving center has received the message and verification of the following:

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

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

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

(a) Departure areas and/or procedures.

(b) Arrival procedures.

(c) Overflight handling procedures.

(d) Transition from radar to nonradar.

(e) Transition from ARTS to non−ARTS.

(f) Transition from ASR to CENRAP.

(g) Transition to or from ESL.

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

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

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

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

2−3−5. AIRCRAFT IDENTITY

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

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

EXAMPLE−
"N12345."
"TN5552Q."
"AAl192."
"LN751B."

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

b. Military Aircraft.

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

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

EXAMPLE−
"SAMP Three One Six."

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

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

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

TBL 2−3−6
Branch of Service Prefix

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

TBL 2−3−7
Military Mission Prefix

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

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

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

TBL 2–3–8
President and Family

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

TBL 2–3–9
Vice President and Family

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

c. Special use. Approved special use identifiers.

2–3–6. AIRCRAFT TYPE

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

2–3–7. USAF/USN UNDERGRADUATE PILOTS

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

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

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

2–3–8. AIRCRAFT EQUIPMENT SUFFIX

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

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

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

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

d. GNSS-equipped aircraft:

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

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

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

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

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

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

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

f. *EN ROUTE.* When you determine that weather reports for an airport will not be required for a specific time period, inform the FSS or tower of this determination.

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

2–6–4. ISSUING WEATHER AND CHAFF AREAS

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

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

2. The general width of the area and the area of coverage in terms of fixes or distance and direction from fixes.

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

REFERENCE–
AIM, Para 7–1–12, ATC Inflight Weather Avoidance Assistance.

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

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

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

1. LIGHT.

2. MODERATE.

3. HEAVY.

4. EXTREME.

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

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

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

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

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

d. *TERMINAL:* In STARS, correlate precipitation descriptors from subparagraph c as follows:

1. Level 1 = LIGHT

2. Level 2 = MODERATE

3. Levels 3 and 4 = HEAVY

4. Levels 5 and 6 = EXTREME

e. When precipitation intensity information is not available.

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

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

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

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

1. Describe the lowest displayable precipitation intensity as MODERATE.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

or

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

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

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

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

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

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

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

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

or

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

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

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

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

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

k. En Route Fourth Line Data Transfer

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

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

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

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

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

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

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

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

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

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

2–6–5. DISSEMINATING OFFICIAL WEATHER INFORMATION

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

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

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

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

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

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

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

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

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

2–6–6. HAZARDOUS INFLIGHT WEATHER ADVISORY

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

a. Controllers must broadcast a hazardous inflight weather advisory on all frequencies, except emergency frequency, upon receipt of hazardous weather information. Controllers are required to disseminate data based on the operational impact on the sector or area of control jurisdiction. Pilots requesting additional information must be directed to contact the nearest Flight Service.

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

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

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

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

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

3–1–7. POSITION DETERMINATION

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

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

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

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

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

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

REFERENCE–
FAA Order JO 7110.65, Para 2–6–2, PIREP Solicitation and Dissemination.
FAA Order JO 7110.65, Para 2–9–3, Content.
FAA Order JO 7110.65, Para 3–10–1, Landing Information.

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

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

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

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

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

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

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

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

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

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

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

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

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

EXAMPLE–
17A MBA 40K – 3MF

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

EXAMPLE–
17D WSA 25K+ 2MD

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

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

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

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

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

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

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

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

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

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

c. Wind Shear Escape Procedures.

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

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

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

REFERENCE–
P/CG Term – Wind Shear Escape.

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

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

(a) Departures:

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

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

(b) Arrivals:

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

Section 4. Route Assignment

4–4–1. ROUTE USE

Clear aircraft via routes consistent with the altitude stratum in which the operation is to be conducted by one or more of the following:

NOTE–
Except for certain NAVAIDs/routes used by scheduled air carriers or authorized for specific uses in the control of IFR aircraft, Air Traffic Service (ATS) routes, and NAVAIDs established for use at specified altitudes are shown on U.S. government charts or DOD FLIP charts.

REFERENCE–
FAA Order JO 7110.65, Para 2–5–2, NAVAID Terms.
FAA Order JO 7110.65, Para 4–1–2, Exceptions.
FAA Order JO 7110.65, Para 4–5–6, Minimum En Route Altitudes.
FAA Order JO 7110.65, Para 5–6–1, Application.

a. Designated ATS routes.

PHRASEOLOGY–
VIA:

VICTOR (color) (airway number)(the word Romeo when RNAV for existing Alaska routes),

or

J (route number) (the word Romeo when RNAV for existing Alaska routes),

or

Q (route number)

or

Tango (route number)

or

SUBSTITUTE (ATS route) FROM (fix) to (fix),

or

IR (route number).

CROSS/JOIN VICTOR/(color) (airway number), (number of miles) MILES (direction) OF (fix).

b. Radials, courses, azimuths to or from NAVAIDs.

PHRASEOLOGY–
VIA;

(name of NAVAID) (specified) RADIAL/COURSE/AZIMUTH,

or

(fix) AND (fix),

or

RADIALS OF (ATS route) AND (ATS route).

c. Random routes.

1. When not being radar monitored, GNSS-equipped RNAV aircraft on random RNAV routes must be cleared via or reported to be established on a point–to–point route.

(a) The points must be published NAVAIDs, waypoints, fixes or airports recallable from the aircraft's navigation database. The points must be displayed on controller video maps or depicted on the controller chart displayed at the control position. When applying nonradar separation the maximum distance between points must not exceed 500 miles.

(b) Protect 4 miles either side of the route centerline.

(c) Assigned altitudes must be at or above the highest MIA along the projected route segment being flown, including the protected airspace of that route segment.

2. Impromptu.

PHRASEOLOGY–
DIRECT (name of NAVAID/waypoint/fix/airport).

NOTE–
A random impromptu routing is a direct course initiated by ATC or requested by the pilot during flight. Aircraft are cleared from their present position to a NAVAID, waypoint, fix, or airport.

3. Point-to-Point.

PHRASEOLOGY–
After (fix) proceed direct (fix)

NOTE–
A point-to-point route segment begins and ends with a published NAVAID, waypoint, fix, or airport.

d. DME arcs of NAVAIDs.

e. Radials, courses, azimuths, and headings of departure or arrival routes.

f. SIDs/STARs.

g. Vectors.

h. Fixes defined in terms of degree–distance from NAVAIDs for special military operations.

i. Courses, azimuths, bearings, quadrants, or radials within a radius of a NAVAID.

PHRASEOLOGY–
CLEARED TO FLY (general direction from NAVAID) OF (NAVAID name and type) BETWEEN (specified) COURSES TO/BEARINGS FROM/RADIALS (NAVAID name when a NDB) WITHIN (number of miles) MILE RADIUS,

or

CLEARED TO FLY (specified) QUADRANT OF (NAVAID name and type) WITHIN (number of miles) MILE RADIUS.

EXAMPLE–
1. *"Cleared to fly east of Allentown VORTAC between the zero four five and the one three five radials within four zero mile radius."*

2. *"Cleared to fly east of Crystal Lake radio beacon between the two two five and the three one five courses to Crystal Lake within three zero mile radius."*

3. *"Cleared to fly northeast quadrant of Philipsburg VORTAC within four zero mile radius."*

j. Fixes/waypoints defined in terms of:

1. Published name; or

2. Degree–distance from NAVAIDs; or

3. Latitude/longitude coordinates, state the latitude and longitude in degrees and minutes including the direction from the axis such as North or West; or

4. Offset from published or established ATS route at a specified distance and direction for random (impromptu) RNAV Routes.

PHRASEOLOGY–
DIRECT (fix/waypoint)

DIRECT TO THE (facility) (radial) (distance) FIX.

DIRECT (number degrees) DEGREES, (number minutes) MINUTES (north or south), (number degrees) DEGREES, (number minutes) MINUTES (east or west).

OFFSET (distance) RIGHT/LEFT OF (route).

EXAMPLE–
"Direct SUNOL."
"Direct to the Appleton three one zero radial two five mile fix."
"Direct 32 degrees, 45 minutes north, 105 degrees, 37 minutes west."
"Offset eight miles right of Victor six."

REFERENCE–
FAA Order JO 7110.65, Para 2–3–8, Aircraft Equipment Suffix.
FAA Order JO 7110.65, Para 2–5–3, NAVAID Fixes.
FAA Order JO 7110.65, Para 4–1–2, Exceptions.
FAA Order JO 7110.65, Para 5–5–1, Application.
FAA Order JO 7110.65, Para 6–5–4, Minima Along Other Than Established Airways or Routes.
P/CG Term - Global Navigation Satellite System (GNSS)[ICAO].

4–4–2. ROUTE STRUCTURE TRANSITIONS

To effect transition within or between route structures, clear an aircraft by one or more of the following methods, based on NAVAIDs or RNAV:

a. Vector aircraft to or from radials, courses, or azimuths of the ATS route assigned.

b. Assign a SID/STAR.

c. Clear departing or arriving aircraft to climb or descend via radials, courses, or azimuths of the ATS route assigned.

d. Clear departing or arriving aircraft directly to or between the NAVAIDs forming the ATS route assigned.

e. Clear aircraft to climb or descend via the ATS route on which flight will be conducted.

f. Clear aircraft to climb or descend on specified radials, courses, or azimuths of NAVAIDs.

g. Clear RNAV aircraft between designated or established ATS routes via random RNAV routes to a NAVAID, waypoint, airport or fix on the new route. Provide radar monitoring to aircraft transitioning via random RNAV routes.

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

REFERENCE–
FAA Order JO 7110.65, Para 4–1–2, Exceptions.
FAA Order JO 7110.65, Para 4–4–1, Route Use.
FAA Order JO 7110.65, Para 5–5–1, Application.
FAA Order JO 7110.65, Para 6–5–4, Minima Along Other Than Established Airways Or Routes.
P/CG Term – Global Navigation Satellite System (GNSS)[ICAO].

4–4–3. DEGREE–DISTANCE ROUTE DEFINITION FOR MILITARY OPERATIONS

EN ROUTE

a. Do not accept a military flight plan whose route or route segments do not coincide with designated Air Traffic Service routes or with a direct course between NAVAIDs unless it is authorized in subparagraph b and meets the following degree–distance route definition and procedural requirements:

1. The route or route segments must be defined in the flight plan by degree–distance fixes composed of:

(a) A location identifier;

(b) Azimuth in degrees magnetic; and

(c) Distance in miles from the NAVAID used.

EXAMPLE–
"MKE 030025."

2. The NAVAIDs selected to define the degree–distance fixes must be those authorized for use at the altitude being flown and at a distance within the published service volume area.

3. The distance between the fixes used to define the route must not exceed:

(a) Below FL 180– 80 miles;

(b) FL 180 and above– 260 miles; and

(c) For celestial navigation routes, all altitudes– 260 miles.

4. Degree–distance fixes used to define a route must be considered compulsory reporting points except that an aircraft may be authorized by ATC to omit reports when traffic conditions permit.

5. Military aircraft using degree–distance route definition procedures must conduct operations in accordance with the following:

(a) Unless prior coordination has been effected with the appropriate air traffic control facility, flight plan the departure and the arrival phases to conform with the routine flow of traffic when operating within 75 miles of the departure and the arrival airport. Use defined routes or airways or direct courses between NAVAIDs or as otherwise required to conform to the normal flow of traffic.

(b) Flight plans must be filed at least 2 hours before the estimated time of departure.

b. The following special military operations are authorized to define routes, or portions of routes, by degree–distance fixes:

1. Airborne radar navigation, radar bomb scoring (RBS), and airborne missile programming conducted by the USAF, USN, and RAF.

2. Celestial navigation conducted by the USAF, USN, and RAF.

3. Target aircraft operating in conjunction with air defense interceptors, and air defense interceptors while en route to and from assigned airspace.

4. Missions conducted above FL 450.

5. USN fighter and attack aircraft operating in positive control airspace.

6. USN/USMC aircraft, TACAN equipped, operating within the Honolulu FIR/Hawaiian airways area.

7. USAF/USN/USMC aircraft flight planned to operate on MTRs.

8. USAF Air Mobility Command (AMC) aircraft operating on approved station-keeping equipment (SKE) routes in accordance with the conditions and limitations listed in FAA Exemption No. 4371 to 14 CFR Section 91.177(a)(2) and 14 CFR Section 91.179(b)(1).

4–4–4. ALTERNATIVE ROUTES

When any part of an airway or route is unusable because of NAVAID status, clear aircraft that are not RNAV capable via one of the following alternative routes:

a. A route depicted on current U.S. Government charts/publications. Use the word "substitute" immediately preceding the alternative route in issuing the clearance.

b. A route defined by specifying NAVAID radials, courses, or azimuths.

c. A route defined as direct to or between NAVAIDs.

d. Vectors.

NOTE–
Inform area navigation aircraft that will proceed to the NAVAID location of the NAVAID outage.

4–4–5. CLASS G AIRSPACE

Include routes through Class G airspace only when requested by the pilot.

NOTE–
1. *Separation criteria are not applicable in Class G airspace. Traffic advisories and safety alerts are applicable within Class G airspace to aircraft that are in direct communication with ATC.*

2. *Flight plans filed for random RNAV routes through Class G airspace are considered a request by the pilot.*

3. *Flight plans containing MTR segments in/through Class G airspace are considered a request by the pilot.*

REFERENCE–
FAA Order JO 7110.65, Para 2–1–1, ATC Service.
P/CG – Class G Airspace.
P/CG – Uncontrolled Airspace.

4–4–6. DIRECT CLEARANCES

a. Unless operational necessity dictates, do not issue a routing clearance that will take an aircraft off of its flight plan route if:

1. The aircraft is part of a known traffic management initiative.

2. The part of the route under consideration for the direct routing is within a protected segment. If a flight routing within a protected segment is amended, coordination must be accomplished as follows:

(a) ATCS: with TMU.

(b) Terminal facility TMU: with overlying ARTCC TMU.

(c) ARTCC TMU (for amendments outside their facility): with ATCSCC.

b. *EN ROUTE*. Do not issue revised routing clearances that will take an aircraft off its flight plan route past the last fix in your facility's airspace, unless requested by the pilot or operational necessity dictates.

NOTE–
Nothing in this paragraph must preclude a controller from issuing a routing clearance that conforms to a letter of agreement or standard operating procedure within their own facility or between facilities, is required to maintain separation or comply with traffic flow management initiatives.

Section 5. Altitude Assignment and Verification

4–5–1. VERTICAL SEPARATION MINIMA

Separate instrument flight rules (IFR) aircraft using the following minima between altitudes:

a. Up to and including FL 410– 1,000 feet.

b. Apply 2,000 feet at or above FL 290 between non–RVSM aircraft and all other aircraft at or above FL 290.

c. Above FL 410– 2,000 feet, except:

1. In oceanic airspace, above FL 450 between a supersonic and any other aircraft– 4,000 feet.

2. Above FL 600 between military aircraft– 5,000 feet.

NOTE–
Oceanic separation procedures are supplemented in Chapter 8; Section 7, Section 8, Section 9, and Section 10.

REFERENCE–
FAA Order JO 7110.65, Para 5–5–5, Vertical Application.
FAA Order JO 7110.65, Para 6–6–1, Application.
FAA Order JO 7110.65, Para 9–2–14, Military Operations Above FL 600.

4–5–2. FLIGHT DIRECTION

Clear aircraft at altitudes according to the TBL 4–5–1.

TBL 4–5–1
Altitude Assignment

Aircraft Operating	On course degrees magnetic	Assign	Examples
Below 3,000 feet above surface	Any course	Any altitude	
At and below FL 410	0 through 179	Odd cardinal altitude or flight levels at intervals of 2,000 feet	3,000, 5,000, FL 310, FL 330
	180 through 359	Even cardinal altitude or flight levels at intervals of 2,000 feet	4,000, 6,000, FL 320, FL 340
Above FL 410	0 through 179	Odd cardinal flight levels at intervals of 4,000 feet beginning with FL 450	FL 450, FL 490, FL 530
	180 through 359	Odd cardinal flight levels at intervals of 4,000 feet beginning with FL 430	FL 430, FL 470, FL 510
One way routes (except in composite systems)	Any course	Any cardinal altitude or flight level below FL 410 or any odd cardinal flight level above FL 410	FL 270, FL 280, FL 290, FL 300, FL 310, FL 410, FL 430, FL 450
Within an ALTRV	Any course	Any altitude or flight level	
In aerial refueling tracks and anchors	Any course	Altitude blocks as requested. Any altitude or flight level	050B080, FL 180B220, FL 280B310

REFERENCE–
FAA Order JO 7110.65, Para 4–5–3, Exceptions.
FAA Order JO 7110.65, Para 7–7–5, Altitude Assignments.
FAA Order JO 7110.65, Para 9–3–2, Separation Minima.

4–5–3. EXCEPTIONS

When traffic, meteorological conditions, or aircraft operational limitations prevent assignment of altitudes prescribed in paragraph 4–5–2, Flight Direction, assign any cardinal altitude or flight level below FL 410 or any odd cardinal flight level at or above FL 410 without regard to direction of flight as follows:

NOTE–
See paragraph 2–3–10, Control Symbology, for control abbreviations and symbols to be used in conjunction with this paragraph.

a. For traffic conditions, take this action only if one of the following conditions exists:

1. Aircraft remain within a facility's area and prior approval is obtained from other affected positions or sectors or the operations are covered in a Facility Directive.

2. Aircraft will proceed beyond the facility's area and specific operations and procedures

permitting random altitude assignment are covered in a letter of agreement between the appropriate facilities.

b. Military aircraft are operating on random routes and prior approval is obtained from the facility concerned.

c. For meteorological conditions, take this action only if you obtain prior approval from other affected positions or sectors within your facility and, if necessary, from the adjacent facility concerned.

d. For aircraft operational limitations, take this action only if the pilot informs you the available appropriate altitude exceeds the operational limitations of his/her aircraft and only after you obtain prior approval from other affected positions or sectors within your facility and, if necessary, from the adjacent facility concerned.

e. For mission requirements, take this action only when the aircraft is operating on an MTR.

REFERENCE–
FAA Order JO 7110.65, Para 7–7–5, Altitude Assignments.
FAA Order JO 7110.65, Para 9–3–2, Separation Minima.

4–5–4. LOWEST USABLE FLIGHT LEVEL

If a change in atmospheric pressure affects a usable flight level in your area of jurisdiction, use TBL 4–5–2 to determine the lowest usable flight level to clear aircraft at or above 18,000 feet MSL.

TBL 4–5–2
Lowest Usable FL

Altimeter Setting	Lowest Usable FL
29.92” or higher	180
29.91” to 28.92”	190
28.91” to 27.92”	200

REFERENCE–
FAA Order JO 7110.65, Para 9–3–2, Separation Minima.

4–5–5. ADJUSTED MINIMUM FLIGHT LEVEL

When the prescribed minimum altitude for IFR operations is at or above 18,000 feet MSL and the atmospheric pressure is less than 29.92”, add the appropriate adjustment factor from TBL 4–5–3 to the flight level equivalent of the minimum altitude in feet to determine the adjusted minimum flight level.

TBL 4–5–3
Minimum FL Adjustment

Altimeter Setting	Adjustment Factor
29.92” or higher	None
29.91” to 29.42”	500 feet
29.41” to 28.92”	1,000 feet
28.91” to 28.42”	1,500 feet
28.41” to 27.92”	2,000 feet

4–5–6. MINIMUM EN ROUTE ALTITUDES (MEA)

Except as provided in subparagraphs a and b below, assign altitudes at or above the MEA for the route segment being flown. When a lower MEA for subsequent segments of the route is applicable, issue the lower MEA only after the aircraft is over or past the Fix/NAVAID beyond which the lower MEA applies unless a crossing restriction at or above the higher MEA is issued.

a. An aircraft may be cleared below the MEA but not below the MOCA for the route segment being flown if the altitude assigned is at least 300 feet above the floor of controlled airspace and one of the following conditions is met:

NOTE–
Controllers must be aware that in the event of radio communications or GNSS failure, a pilot will climb to the MEA for the route segment being flown.

1. For aircraft using VOR, VORTAC or TACAN for navigation, this applies only within 22 miles of that NAVAID.

2. When radar procedures are used**,** the following actions are taken:

(a) In the absence of a published MOCA, assign altitudes at or above the MVA or MIA along the route of flight, and

(b) Lost communications instructions are issued.

3. The aircraft is GNSS equipped.

b. An aircraft may be cleared to operate on jet routes below the MEA (but not below the prescribed minimum altitude for IFR operations) or above the maximum authorized altitude if, in either case, radar service is provided.

Section 6. Holding Aircraft

4–6–1. CLEARANCE TO HOLDING FIX

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

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

PHRASEOLOGY–
EXPECT FURTHER CLEARANCE VIA (routing).

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

b. Holding instructions.

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

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

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

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

or

CLEARED TO (fix), NO DELAY EXPECTED.

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

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

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

PHRASEOLOGY–
EXPECT FURTHER CLEARANCE (time),

and if required,

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

or

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

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

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

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

PHRASEOLOGY–
EXPECT FURTHER CLEARANCE (time),

and if required,

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

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

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

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

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

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

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

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

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

"Cleared to Wayne, no delay expected."

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

4–6–2. CLEARANCE BEYOND FIX

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

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

1. Clearance limit or approach clearance.

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

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

(b) The phrase "via last routing cleared." Use this phrase only when the most recently issued routing to the new clearance limit is valid and verbiage will be reduced.

PHRASEOLOGY–
VIA LAST ROUTING CLEARED.

3. Assigned altitude if different from present altitude.

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

4–6–3. DELAYS

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

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

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

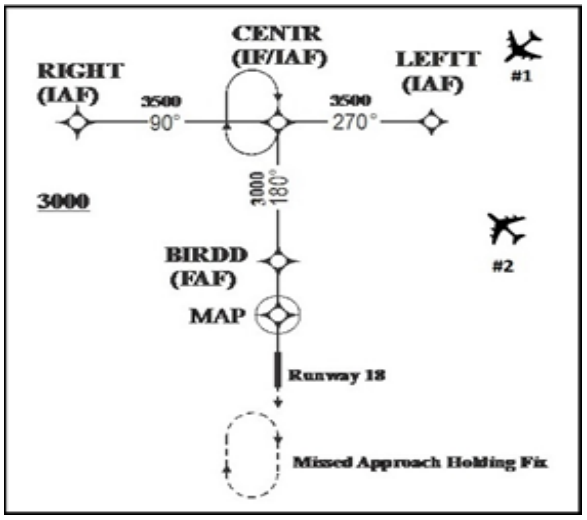
REFERENCE–
FAA Order JO 7110.65, Para 5–13–9, ERAM Computer Entry of Hold Information.

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

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

The MVA in the area is 3,000 feet and Aircraft 2 is at 3,000 feet. "Cleared direct LEFTT direct CENTR, maintain three thousand until CENTR, cleared straight-in RNAV Runway One Eight Approach."

FIG 4–8–2
Approach Clearance Example



NOTE–
1. *The altitude assigned must assure IFR obstruction clearance from the point at which the approach clearance is issued until established on a segment of a published route or instrument approach procedure.*

2. *If the altitude assignment is VFR-on-top, it is conceivable that the pilot may elect to remain high until arrival over the final approach fix which may require the pilot to circle to descend so as to cross the final approach fix at an altitude that would permit landing.*

3. *An aircraft is not established on an approach until at or above an altitude published on that segment of the approach.*

REFERENCE–
FAA Order 8260.3 United States Standard for Terminal Instrument Procedures (TERPS), Para 11-3.

c. Except for visual approaches, do not clear an aircraft direct to the FAF unless it is also an IAF, wherein the aircraft is expected to execute the depicted procedure turn or hold-in-lieu of procedure turn.

d. Intercept angles greater than 90 degrees may be used when a procedure turn, a hold-in-lieu of procedure turn pattern, or arrival holding is depicted and the pilot will execute the procedure.

e. If a procedure turn, hold-in-lieu of procedure turn, or arrival holding pattern is depicted and the angle of intercept is 90 degrees or less, the aircraft must be instructed to conduct a straight-in approach if ATC does not want the pilot to execute a procedure turn or hold-in-lieu of procedure turn. (See FIG 4–8–3)

PHRASEOLOGY–
CLEARED STRAIGHT-IN (type) APPROACH

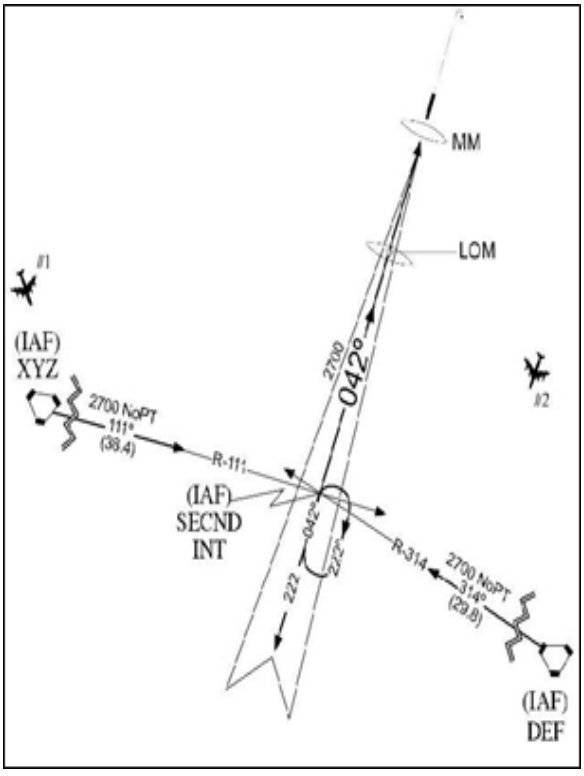
NOTE–
1. *Restate "cleared straight-in" in the approach clearance even if the pilot was advised earlier to expect a straight-in approach.*

2. *Some approach charts have an arrival holding pattern depicted at the IAF using a "thin line" holding symbol. It is charted where holding is frequently required prior to starting the approach procedure so that detailed holding instructions are not required. The arrival holding pattern is not authorized unless assigned by ATC.*

EXAMPLE–
"Cleared direct SECND, maintain at or above three thousand until SECND, cleared straight-in ILS Runway One-Eight approach."

REFERENCE–
AIM, Para 5-4-5, Instrument Approach Procedure Charts.
AIM, Para 5-4-9, Procedure Turn and Hold-in-lieu of Procedure Turn.

FIG 4–8–3
Approach Clearance Example
For Aircraft On a Conventional Approach



EXAMPLE–
Aircraft 1 can be cleared direct to XYZ VORTAC, or SECND because the intercept angle is 90 degrees or less.

Aircraft 2 cannot be cleared to XYZ VORTAC because the intercept angle is greater than 90 degrees.

Aircraft 2 can be cleared to SECND if allowed to execute the hold-in-lieu of procedure turn pattern.

f. Except when applying radar procedures, timed or visual approaches, clear an aircraft for an approach to an airport when the preceding aircraft has landed or canceled IFR flight plan.

g. Where instrument approaches require radar monitoring and radar services are not available, do not use the phraseology "cleared approach," which allows the pilot his/her choice of instrument approaches.

RNAV APPLICATION

h. For RNAV–equipped aircraft operating on unpublished routes, issue approach clearance for conventional or RNAV SIAP including approaches with RF legs only after the aircraft is: (See FIG 4–8–4).

1. Established on a heading or course direct to the IAF at an intercept angle not greater than 90 degrees and is assigned an altitude in accordance with b2. Radar monitoring is required to the IAF for RNAV (RNP) approaches when no hold–in–lieu of procedure turn is executed.

EXAMPLE–
Aircraft 1 can be cleared direct to CENTR. The intercept angle at that IAF is 90 degrees or less. The minimum altitude for IFR operations (14 CFR, section 91.177) along the flight path to the IAF is 3,000 feet. If a hold in lieu of procedure turn pattern is depicted at an IAF and a TAA is not defined, the aircraft must be instructed to conduct a straight-in approach if ATC does not want the pilot to execute a hold-in-lieu procedure turn. "Cleared direct CENTR, maintain at or above three thousand until CENTR, cleared straight-in RNAV Runway One-Eight Approach."

2. Established on a heading or course direct to the IF at an angle not greater than 90 degrees, provided the following conditions are met:

(a) Assign an altitude in accordance with b2 that will permit a normal descent to the FAF.

NOTE–
Controllers should expect aircraft to descend at approximately 150-300 feet per nautical mile when applying guidance in subparagraph h2(a).

(b) Radar monitoring is provided to the IF.

(c) The SIAP must identify the intermediate fix *with the letters "IF."*

(d) For procedures where an IAF is published, the pilot is advised to expect clearance to the IF at least 5 miles from the fix.

EXAMPLE–
"Expect direct CENTR for RNAV Runway One-Eight Approach."

3. Established on a heading or course direct to a fix between the IF and FAF, at an intercept angle not greater than 30 degrees, and assigned an altitude in accordance with b2.

EXAMPLE–
Aircraft 1 is more than 5 miles from SHANN. The minimum altitude for IFR operations (14 CFR Section 91.177) along the flight path to SHANN is 3,000 feet. SHANN is a step down fix between the IF/IAF (CENTR) and the FAF. To clear Aircraft 1 to SHANN, ATC must ensure the intercept angle for the intermediate segment at SHANN is not greater than 30 degrees and must be cleared to an altitude that will allow a normal descent to the FAF. "Cleared direct SHANN, cross SHANN at or above three thousand, cleared RNAV Runway One-Eight Approach."

REFERENCE–
FAA Order JO 7110.65, Para 5–6–2, Methods.
FAA Order JO 7110.65, Chapter 5, Section 9, Radar Arrivals.

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.

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 in Class A Airspace.
14 CFR Section 91.135, Operations in Class A Airspace.

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

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

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

PHRASEOLOGY–
PRIMARY RADAR UNAVAILABLE (describe location). RADAR SERVICES AVAILABLE ON TRANSPONDER 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. All procedures and requirements relating to ATC services using secondary radar targets apply to ATC services provided to targets derived from ADS-B and WAM.

NOTE–
Targets derived from 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 7, Electronic Attack (EA) and Testing Coordination.

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

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

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

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

c. When previously suspended activity will no longer interfere:

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

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

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

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

To stop EA activity:

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

or

STOP BUZZER ON (frequency band or channel).

To resume EA activity:

RESUME STREAM/BURST,

or

RESUME BUZZER ON (frequency band or channel).

5–1–4. MERGING TARGET PROCEDURES

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

1. Aircraft at 10,000 feet and above.

2. Turbojet aircraft regardless of altitude.

REFERENCE–
P/CG Term – Turbojet Aircraft.

3. Presidential aircraft regardless of altitude.

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

EXAMPLE–
"Traffic twelve o'clock, seven miles, eastbound, Gulfstream 650, one seven thousand."

"United Sixteen and American Twenty–Five, traffic twelve o'clock, one zero miles, opposite direction, eastbound Seven Thirty–Seven at flight level three three zero, westbound Airbus Three Twenty at flight level three two zero."

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

c. When both aircraft in subparagraph b are in RVSM airspace and vertically separated by 1,000 feet, and either pilot reports they are unable to maintain RVSM due to turbulence or mountain wave, use vectors to prevent the targets from merging.

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

d. If the pilot requests, vector their aircraft to avoid merging targets with the previously issued traffic.

NOTE–
Because aircraft closure rates can be rapid, issue traffic with enough time for the pilot to decide if a vector is necessary.

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

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

5–1–5. HOLDING PATTERN SURVEILLANCE

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

5–1–6. DEVIATION ADVISORIES

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

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

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

REFERENCE–
FAA Order JO 7110.65, Para 4–2–5, Route or Altitude Amendments.
FAA Order JO 7110.65, Para 7–9–3, Methods.
FAA Order JO 7400.2, Para 20–5–2, RNAV Route Criteria.
AC 90-100A, U.S. Terminal and En Route Area Navigation (RNAV) Operations, Para 8a. Navigation System Accuracy.

5–1–7. MANUAL FIX POSTING

EN ROUTE

Manually record the observed or reported time over a fix at least once for each controlled aircraft in your sector of responsibility when the flight progress recording components of the EAS FDP are not operational.

REFERENCE–
FAA Order JO 7210.3, Para 6–1–6, Flight Progress Strip Usage.

5–1–8. POSITION REPORTING

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

REFERENCE–
P/CG Term– Radar Contact.

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

PHRASEOLOGY–
OVER/PASSING (fix).

(Number of miles) MILES FROM (fix).

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

CROSSING/JOINING/DEPARTING (airway or route).

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

5–1–9. RADAR SERVICE TERMINATION

a. Inform aircraft when radar service is terminated.

PHRASEOLOGY–
RADAR SERVICE TERMINATED (nonradar routing if required).

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

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

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

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

3. At tower-controlled airports where radar coverage does not exist to within $^{1}/_{2}$ mile of the end of the runway, arriving aircraft must be informed when radar service is terminated.

REFERENCE–
FAA Order JO 7210.3, Para 10–5–6, Radar Tolerances.

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

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

REFERENCE–
FAA Order JO 7110.65, Para 7–6–12, Service Provided When Tower is Inoperative.

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.

c. Consider an altitude readout valid when:

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

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

SAY ALTITUDE.

or

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

SAY FLIGHT LEVEL.

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

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

REFERENCE−
FAA Order JO 7110.65, Para 5−2−21, 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.

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

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

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

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

2. If the altitude readout continues to be invalid:

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

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

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

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

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

PHRASEOLOGY−
VERIFY USING TWO NINER NINER TWO AS YOUR ALTIMETER SETTING.

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

VERIFY FLIGHT LEVEL.

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

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

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

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

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

5−2−16. 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 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 Readout, subparagraph c2 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.

5−2−24. ADS−B OUT OFF OPERATIONS

Operators of aircraft with functional ADS−B Out avionics installed and requesting an exception from the requirement to transmit at all times must obtain authorization from FAA System Operations Security. The OS/CIC should inform you of any ADS−B Out OFF operations in your area of jurisdiction.

a. Do not inform such aircraft that their ADS−B transmitter appears to be inoperative.

b. Do not approve any pilot request for ADS−B Out OFF operations. Notify the OS/CIC of the request, including the aircraft call sign and location.

NOTE−
14 CFR Section 91.225(f) requires, in part, that "each person operating an aircraft equipped with ADS−B Out must operate this equipment in the transmit mode at all times unless otherwise authorized by the FAA when that aircraft is performing a sensitive government mission for national defense, homeland security, intelligence or law enforcement purposes, and transmitting would compromise the operations security of the mission or pose a safety risk to the aircraft, crew, or people and property in the air or on the ground."

REFERENCE−
FAA Order JO 7110.65, Para 5−2−22, Inoperative or Malfunctioning ADS−B Transmitter.
FAA Order JO 7210.3, Para 5−4−9, ADS−B Out OFF Operations.
FAA Order JO 7110.67, Para 11, Responsibilities.

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 4–3–8, 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": advise the other facility that a disparity exists between the position declared by their computer and that declared by your STARS 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 4–3–8, 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 4–3–8, 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.

EXAMPLE–
H080/ALB, 080/J121, PH/ALB

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.*

f. Coordination format for weather deviations must use the designated characters:
D–deviation
L–left
R–right
N–north
E–east
S–south
W–west
/F – direct next NAVAID/waypoint
D+2 headings – deviate between.

NOTE–
1. *Two digits specify turns in degrees and must include direction character(s). Three digits specify heading(s).*

2. *The inclusion of a /NAVAID, /waypoint, or /F indicates that the pilot has been authorized to deviate for weather and must rejoin the route at the next NAVAID, waypoint, or fix in the route of flight in accordance with the phraseology in paragraph 2–6–4.*

EXAMPLE–
D90/ATL, DL/KD75U, D090/F

3*. The absence of a NAVAID, waypoint, or /F indicates that the pilot has been authorized to deviate for weather only, and the receiving controller must provide a clearance to rejoin the route in accordance with subparagraph 2–1–15c.*

EXAMPLE–
DN, D20L, D30R, D080+120

g. Coordination format for assigned airspeeds must use the designation character "S" preceding a three−digit number.

NOTE−
A "+" notation may be added to denote an assigned speed at or greater than the displayed value. A "−" notation may be added to denote an assigned speed at or less than the displayed value.

EXAMPLE−
S210, S250, S250+, S280−

h. Aircraft assigned a Mach number must use the designation "M" preceding the two−digit assigned value.

EXAMPLE−
M80, M80+, M80−

REFERENCE−
FAA Order JO 7110.65, Para 5−4−10, En Route Fourth Line Data Block Usage, subpara g NOTE.

i. Aircraft authorized to conduct celestial navigation training within 30 NM of the route centerline specified within the en route clearance.

EXAMPLE−
CELNAV

j. Coordination format for aircraft requesting an altitude change must use the designation characters "RQ" preceding a three−digit number.

EXAMPLE−
RQ170, RQ410

k. Coordination format for aircraft requesting a route change must use the designation "RQ/" preceding a specific fix identifier.

EXAMPLE−
RQ/LAX, RQ/NEUTO

l. The acceptance of a handoff by the receiving controller must constitute receipt of the information contained within the en route fourth line data block. This information must not be modified outside of the controller's area of jurisdiction unless verbally coordinated or specified in a Letter of Agreement or Facility Directive. It is the responsibility of the receiving controller to advise the transferring controller if any information is not understood, or needs to be revised.

NOTE−
Due to system and character limitations the usage of these standardized entries may require additional support via facility directive in order to provide complete coordination.

m. All other control information must be coordinated via other methods.

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

1. Small behind large– *4 miles*.

2. Small behind heavy– *6 miles.*

If the landing threshold cannot be determined, apply the above minima as constant or increasing at the closest point that can be determined prior to the landing threshold.

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

j. *TERMINAL*. 2.5 nautical miles (NM) separation is authorized between aircraft established on the final approach course within 10 NM of the landing runway when operating in 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 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 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 7–4–6, Contact Approach.
P/CG Term – Cruise.

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

1. Severe turbulence is reported.

2. Aircraft are conducting military aerial refueling.

REFERENCE–
FAA Order JO 7110.65, Para 9–2–13, 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.

5–5–7. PASSING OR DIVERGING

a. *TERMINAL*. In accordance with the following criteria, all other approved separation may be discontinued and passing or diverging separation applied when:

1. Single Site ASR or FUSION Mode

(a) Aircraft are on opposite/reciprocal courses and you have observed that they have passed each other; or aircraft are on same or crossing courses/assigned radar vectors and one aircraft has crossed the projected course of the other, and the angular difference between their courses/assigned radar vectors is at least 15 degrees.

NOTE–
Two aircraft, both assigned courses and/or radar vectors with an angular difference of at least 15 degrees, is considered a correct application of this paragraph.

(b) The tracks are monitored to ensure that the primary targets, beacon control slashes, FUSION target symbols, or full digital terminal system primary and/or beacon target symbols will not touch.

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

2. Single Site ARSR or FUSION Mode when target refresh is only from an ARSR or when in FUSION Mode – ISR is displayed.

(a) Aircraft are on opposite/reciprocal courses and you have observed that they have passed each other; or aircraft are on same or crossing courses/assigned radar vectors and one aircraft has crossed the projected course of the other, and the angular difference between their courses/assigned radar vectors is at least 45 degrees.

NOTE–
Two aircraft, both assigned courses and/or radar vectors with an angular difference of at least 45 degrees, is considered a correct application of this paragraph.

(b) The tracks are monitored to ensure that the primary targets, beacon control slashes, FUSION target symbols, or full digital terminal system primary and/or beacon target symbols will not touch.

3. Although approved separation may be discontinued, the requirements of paragraph 5–5–4, Minima, subparagraph g must be applied when wake turbulence separation is required.

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

NOTE–
Apply en route separation rules when using multi–sensor mode.

b. *EN ROUTE*. Vertical separation between aircraft may be discontinued when they are on opposite courses as defined in paragraph 1–2–2, Course Definitions; and

1. You are in communications with both aircraft involved; and

2. You tell the pilot of one aircraft about the other aircraft, including position, direction, type; and

3. One pilot reports having seen the other aircraft and that the aircraft have passed each other; and

4. You have observed that the radar targets have passed each other; and

5. You have advised the pilots if either aircraft is classified as a super or heavy aircraft.

6. Although vertical separation may be discontinued, the requirements of paragraph 5–5–4, Minima, subparagraph g must be applied when wake turbulence separation is required.

EXAMPLE–
"Traffic, twelve o'clock, Boeing Seven Twenty Seven, opposite direction. Do you have it in sight?"

(If the answer is in the affirmative):

"Report passing the traffic."

(When pilot reports passing the traffic and the radar targets confirm that the traffic has passed, issue appropriate control instructions.)

FIG 5–8–4
Parallel Runway Departures

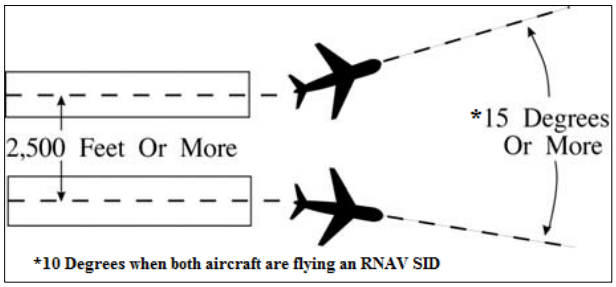
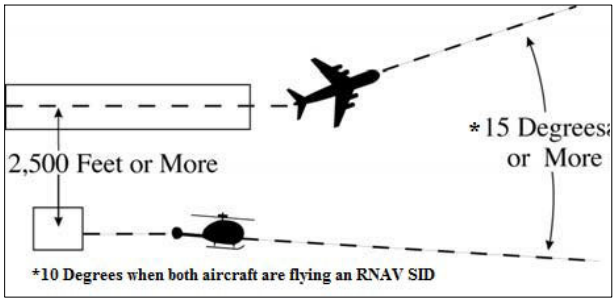


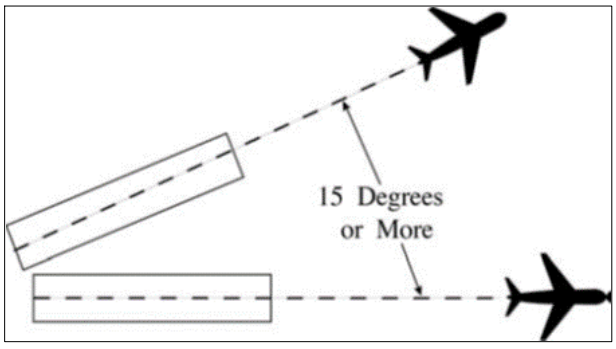
FIG 5–8–5
Parallel Helicopter Course Departures



d. Between aircraft departing from diverging runways:

1. Nonintersecting runways. Authorize simultaneous takeoffs if runways diverge by 15 degrees or more. (See FIG 5–8–6.)

FIG 5–8–6
Nonintersecting Runway Departures



2. Intersecting runways and/or helicopter takeoff courses which diverge by 15 degrees or more. Authorize takeoff of a succeeding aircraft when the preceding aircraft has passed the point of runway and/or takeoff course intersection. When applicable, apply the procedure in paragraph 3–9–5, Anticipating Separation. (See FIG 5–8–7 and FIG 5–8–8.)

FIG 5–8–7
Intersecting Runway Departures

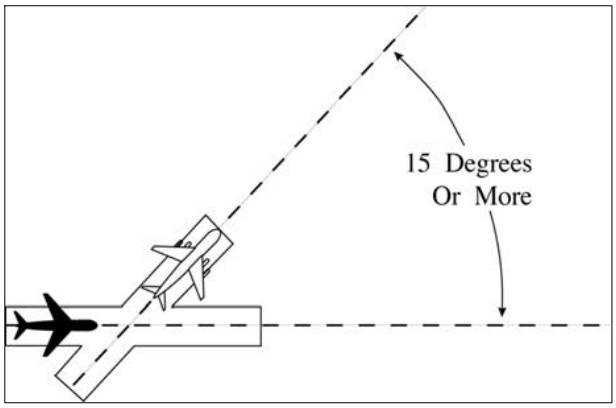
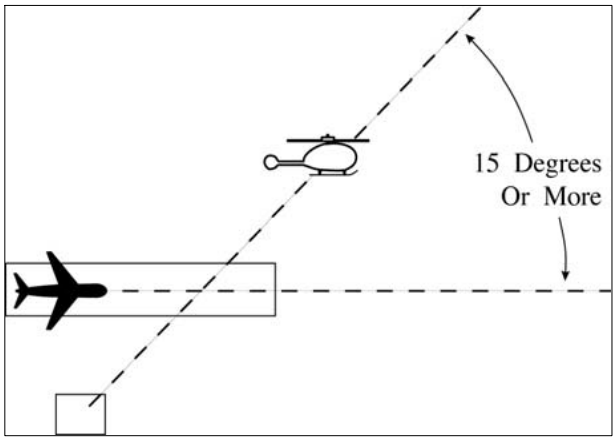


FIG 5–8–8
Intersecting Helicopter Course Departures



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

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

5–8–4. DEPARTURE AND ARRIVAL

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

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

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

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

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

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

a. When parallel runway thresholds are even, the runway centerlines are at least 2,500 feet apart. (See FIG 5–8–9 and FIG 5–8–10.)

FIG 5–8–9
Parallel Thresholds are Even

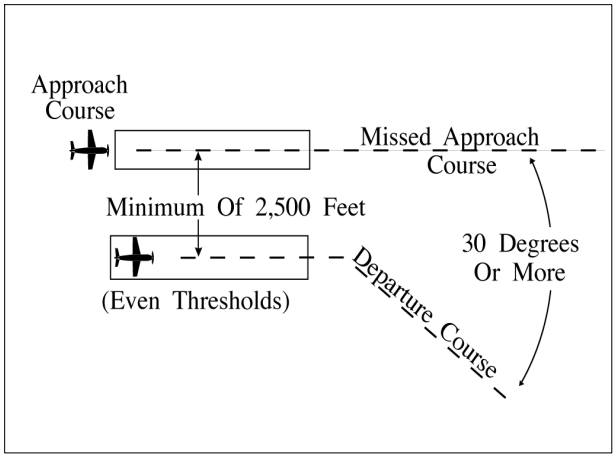
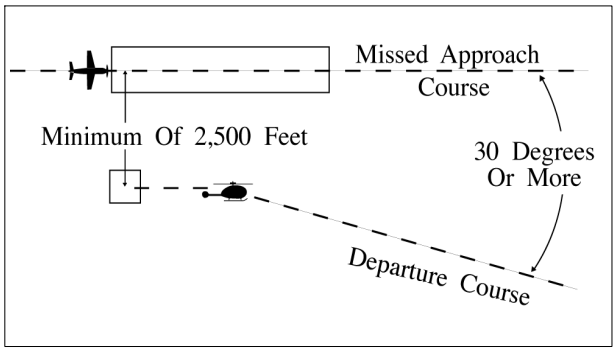


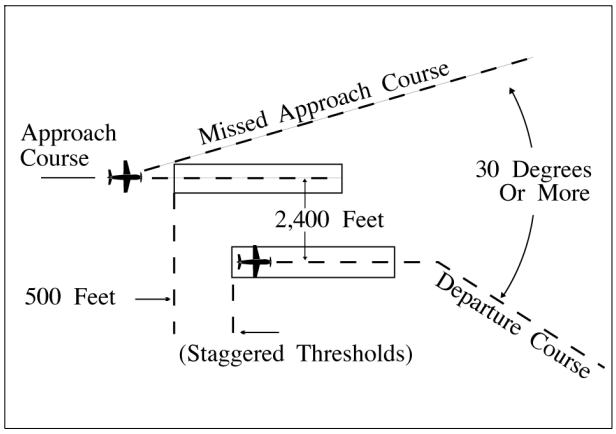
FIG 5–8–10
Parallel Thresholds are Even



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 5–8–11 and FIG 5–8–12.)

FIG 5–8–11
Parallel Thresholds are Staggered



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, Operations–Headquarters, 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.

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

3. Provide the minimum applicable radar separation between the trailing offset aircraft of a leading SOIA pair and the lead straight-in aircraft in the subsequent SOIA pair when the parallel runways have centerlines separated by less than 2,500 feet.

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

b. The following conditions are required when applying the minimum separation between lead straight-in and offset trailing approaches with glideslope courses or vertical navigation authorized in subparagraph a above:

1. Straight–in landings will be made.

2. All appropriate communication, navigation, and surveillance systems are operating normally.

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

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. A no transgression zone (NTZ) is established an equal distance between extended runway final approach courses and must be depicted on the monitor display. The NTZ begins prior to the point where adjacent inbound aircraft first lose vertical separation and extends to a point coincident with the location of the offset approach MAP. 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.

7. Separate monitor controllers, each with transmit/receive and override capability on the local control frequency, must ensure aircraft do not penetrate the depicted NTZ. Facility directives must define the responsibility for providing the minimum applicable longitudinal separation between aircraft on the same final approach course and the minimum applicable longitudinal separation between the trailing offset aircraft of a leading SOIA pair and the lead straight in aircraft in the subsequent SOIA pair when the parallel runways have centerlines separated by less than 2,500 feet.

NOTE–
The aircraft is considered the center of the digitized target for that aircraft for the purposes of ensuring an aircraft does not penetrate the NTZ.

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

1. 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 immediately to the correct final approach course when aircraft are observed to overshoot the turn–on or continue on a track which will penetrate the NTZ.

PHRASEOLOGY–
YOU HAVE CROSSED THE FINAL APPROACH COURSE. TURN (left/right) IMMEDIATELY AND RETURN TO 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–
An instruction that may include a descent to avoid the deviating aircraft should only be used when there is no other reasonable option available to the controller. In such a case, the descent must not put the aircraft below the MVA.

PHRASEOLOGY–
TRAFFIC ALERT, (call sign), TURN (left/right) IMMEDIATELY HEADING (DEGREES), CLIMB AND MAINTAIN (altitude).

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

(a) The lead straight in aircraft passes the end of the NTZ nearest the runway threshold.

(b) The trailing offset aircraft passes the end of the NTZ nearest the runway threshold and has reported the lead straight in aircraft in sight.

(c) The aircraft begins the visual segment of the approach.

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

d. Advise the pilot of the trailing offset aircraft of traffic on the adjacent lead straight–in approach course, if that traffic will be a factor in the visual segment of the approach. The provisions of paragraph 7–2–1, Visual Separation, subparagraph a1, concerning visual separation between aircraft being provided by the tower must not be applied to aircraft conducting SOIAs.

NOTE–
Once advised, the pilot is authorized to continue past the offset approach MAP if all of the following conditions are met: The pilot has the straight-in approach traffic in sight and expects the traffic to remain in sight; the pilot advises ATC that the traffic is in sight; and the pilot has the runway environment in sight. Otherwise, it is the pilot's responsibility to execute a missed approach at the offset approach MAP.

e. Ensure that the trailing offset aircraft is positioned to facilitate the flight crew's ability to see the lead straight in traffic from the nominal clear-of-clouds point to the offset approach MAP so that the flight crew can remain separated from that traffic visually from the offset approach MAP to the runway threshold.

NOTE–
After accepting a clearance for an offset PRM approach, pilots must remain on the offset approach course until passing the offset approach MAP prior to alignment with the runway centerline. Between the offset approach MAP and the runway threshold, the pilot of the offset approach aircraft assumes visual separation responsibility from the aircraft on the straight-in approach, which means maneuvering the aircraft as necessary to avoid the straight in approach traffic until landing, and providing wake turbulence avoidance, if necessary.

f. In the visual segment between the offset approach MAP and the runway threshold, if the pilot of the trailing offset aircraft loses visual contact with the lead straight-in traffic, the pilot must advise ATC as soon as practical and follow the published missed approach procedure. If necessary, issue alternate missed approach instructions.

g. Wake turbulence requirements between aircraft on adjacent final approach courses inside the offset approach MAP are as follows (standard in-trail wake separation must be applied between aircraft on the same approach course):

1. When runways are at least 2,500 feet apart, there are no wake turbulence requirements between aircraft on adjacent final approach courses.

2. For runways less than 2,500 feet apart, whenever the ceiling is greater than or equal to 500 feet above the MVA, wake vortex spacing between aircraft on adjacent final approach courses need not be applied.

3. For runways less than 2,500 feet apart, whenever the ceiling is less than 500 feet above the MVA, wake vortex spacing between aircraft on adjacent final approach courses, as described in 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, Operations-Headquarters, AJT-2. The wake turbulence mitigation techniques employed will be based on each airport's specific runway geometry and meteorological conditions and implemented through local facility directives.

4. Issue all applicable wake turbulence advisories.

REFERENCE–
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.

Section 12. PAR Approaches– Terminal

5–12–1. GLIDEPATH NOTIFICATION

Inform the aircraft when it is approaching glidepath (approximately 10 to 30 seconds before final descent).

PHRASEOLOGY–
APPROACHING GLIDEPATH.

5–12–2. DECISION HEIGHT (DH) NOTIFICATION

Provide the DH to any pilot who requests it.

PHRASEOLOGY–
DECISION HEIGHT (number of feet).

5–12–3. DESCENT INSTRUCTION

When an aircraft reaches the point where final descent is to start, instruct it to begin descent.

PHRASEOLOGY–
BEGIN DESCENT.

5–12–4. GLIDEPATH AND COURSE INFORMATION

a. Issue course guidance and inform the aircraft when it is on glidepath and on course, and frequently inform the aircraft of any deviation from glidepath or course. Transmissions with aircraft on precision final approach should occur approximately every 5 seconds.

PHRASEOLOGY–
HEADING (heading).

ON GLIDEPATH.

ON COURSE,

or

SLIGHTLY/WELL ABOVE/BELOW GLIDEPATH.

SLIGHTLY/WELL LEFT/RIGHT OF COURSE.

NOTE–
Controllers should not key the radio transmitter continuously during radar approaches to preclude a lengthy communications block. The decision on how often transmitters are unkeyed is the controller's prerogative.

b. Issue trend information as required, to indicate target position with respect to the azimuth and elevation cursors and to describe target movement as appropriate corrections are issued. Trend information may be modified by the terms "RAPIDLY" or "SLOWLY," as appropriate.

EXAMPLE–
"Going above/below glidepath."
"Going right/left of course."
"Above/below glidepath and coming down/up."
"Above/below glidepath and holding."
"Left/right of course and holding/correcting."

REFERENCE–
FAA Order JO 7110.65, Para 5–12–7, Position Advisories.

5–12–5. DISTANCE FROM TOUCHDOWN

Inform the aircraft of its distance from touchdown at least once each mile on final approach.

PHRASEOLOGY–
(Number of miles) MILES FROM TOUCHDOWN.

5–12–6. DECISION HEIGHT

Inform the aircraft when it reaches the published decision height.

PHRASEOLOGY–
AT DECISION HEIGHT.

5–12–7. POSITION ADVISORIES

a. Continue to provide glidepath and course information prescribed in paragraph 5–12–4, Glidepath and Course Information, subparagraphs a and b, until the aircraft passes over threshold.

NOTE–
Glidepath and course information provided below decision height is advisory only. 14 CFR Section 91.175 outlines pilot responsibilities for descent below decision height.

b. Inform the aircraft when it is passing over the approach lights.

PHRASEOLOGY–
OVER APPROACH LIGHTS.

c. Inform the aircraft when it is passing over the landing threshold and inform it of its position with respect to the final approach course.

PHRASEOLOGY–
OVER LANDING THRESHOLD, (position with respect to course).

REFERENCE–
FAA Order JO 7110.65, Para 5–10–14, Final Approach Abnormalities.

5–12–8. APPROACH GUIDANCE TERMINATION

a. Discontinue precision approach guidance when:

1. Requested by the pilot.

2. In your opinion, continuation of a safe approach to the landing threshold is questionable.

3. The aircraft passes over landing threshold.

4. The pilot reports the runway/approach lights in sight and requests to or advises that he/she will proceed visually.

NOTE–
A pilot's report of "runway in sight" or "visual" is not a request to proceed visually.

b. When precision approach guidance is discontinued in accordance with subparagraph a, advise the aircraft of its position and to proceed visually.

PHRASEOLOGY–
(Distance) MILE(S) FROM TOUCHDOWN, PROCEED VISUALLY (additional instructions/clearance as required).

c. After a pilot has reported the runway/approach lights in sight and requested to or advised that he/she will proceed visually, and has been instructed to proceed visually, all PAR approach procedures must be discontinued.

d. Continue to monitor final approach and frequency. Pilots must remain on final controller's frequency until touchdown or otherwise instructed.

REFERENCE–
FAA Order JO 7110.65, Para 5–10–14, Final Approach Abnormalities.

5–12–9. COMMUNICATION TRANSFER

Issue communications transfer instructions.

PHRASEOLOGY–
CONTACT (terminal control function) (frequency, if required) AFTER LANDING.

NOTE–
Communications transfer instructions should be delayed slightly until the aircraft is on the landing roll-out to preclude diversion of the pilot's attention during transition and touchdown.

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

5–12–10. ELEVATION FAILURE

a. If the elevation portion of PAR equipment fails during a precision approach:

1. Discontinue PAR instructions and tell the aircraft to take over visually or if unable, to execute a missed approach. If the aircraft executes a missed approach, apply subparagraph 2 below.

PHRASEOLOGY–
NO GLIDEPATH INFORMATION AVAILABLE. IF RUNWAY, APPROACH/RUNWAY LIGHTS, NOT IN SIGHT, EXECUTE MISSED APPROACH/(alternative instructions).

2. If a surveillance approach, ASR or PAR without glide slope, is established for the same runway, inform the aircraft that a surveillance approach can be given. Use ASR or the azimuth portion of the PAR to conduct the approach and apply Chapter 5, Radar, Section 11, Surveillance Approaches– Terminal. When the PAR azimuth is used, inform the pilot that mileage information will be from touchdown, and at those runways where specific minima have been established for PAR without glideslope, inform the pilot that the PAR azimuth will be used for the approach.

EXAMPLE–
1. *Approach information when PAR azimuth used:*
"This will be a surveillance approach to runway three six. Mileages will be from touchdown."
or
"This will be a surveillance approach to runway three six using P–A–R azimuth. Mileages will be from touchdown."

2. *Descent Instructions:*
"Five miles from touchdown, descend to your minimum descent altitude/minimum altitude."

REFERENCE–
FAA Order JO 7110.65, Para 5–10–2, Approach Information.
FAA Order JO 7110.65, Para 5–11–4, Descent Instructions.

b. If the elevation portion of the PAR equipment is inoperative before starting a precision approach, apply subparagraph a2.

5–12–11. SURVEILLANCE UNUSABLE

PAR approaches may be conducted when the ASR is unusable provided a nonradar instrument approach will position the aircraft over a navigational aid or DME fix within the precision radar coverage, or an adjacent radar facility can provide a direct radar handoff to the PAR controller.

NOTE–
The display of the NAVAID or DME fix in accordance with paragraph 5−3−2, Primary Radar Identification Methods, is not required provided the NAVAID or DME fix can be correlated on a PAR scope.

Section 13. Automation– En Route

5–13–1. CONFLICT ALERT (CA) AND MODE C INTRUDER (MCI) ALERT

a. When a CA or MCI alert is displayed, evaluate the reason for the alert without delay and take appropriate action.

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

b. If another controller is involved in the alert, initiate coordination to ensure an effective course of action. Coordination is not required when immediate action is dictated.

c. Suppressing/Inhibiting CA/MCI alert.

1. The controller may suppress the display of a CA/MCI alert from a control position with the application of one of the following suppress/inhibit computer functions:

(a) The Conflict Suppress (CO) function may be used to suppress the CA/MCI display between specific aircraft for a specific alert.

NOTE–
See NAS–MD–678 for the EARTS conflict suppress message.

(b) The Group Suppression (SG) function must be applied exclusively to inhibit the displaying of alerts among military aircraft engaged in special military operations where standard en route separation criteria does not apply.

NOTE–
Special military operations where the SG function would typically apply involve those activities where military aircraft routinely operate in proximities to each other that are less than standard en route separation criteria; i.e., air refueling operations, ADC practice intercept operations, etc.

2. The computer entry of a message suppressing a CA/MCI alert constitutes acknowledgment for the alert and signifies that appropriate action has or will be taken.

3. The CA/MCI alert may not be suppressed or inhibited at or for another control position without being coordinated.

5–13–2. EN ROUTE MINIMUM SAFE ALTITUDE WARNING (E-MSAW)

a. When an E-MSAW alert is displayed, immediately analyze the situation and take the appropriate action to resolve the alert.

NOTE–
Caution should be exercised when issuing a clearance to an aircraft in reaction to an E-MSAW alert to ensure that adjacent MIA areas are not a factor.

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

b. The controller may suppress the display of an E-MSAW alert from his/her control position with the application of one of the following suppress/inhibit computer functions:

1. The specific alert suppression message may be used to inhibit the E-MSAW alerting display on a single flight for a specific alert.

2. The indefinite alert suppression message must be used exclusively to inhibit the display of E-MSAW alerts on aircraft known to be flying at an altitude that will activate the alert feature of one or more MIA areas within an ARTCC.

NOTE–
1. *The indefinite alert suppression message will remain in effect for the duration of the referenced flight's active status within the ARTCC unless modified by controller action.*

2. *The indefinite alert suppression message would typically apply to military flights with clearance to fly low-level type routes that routinely require altitudes below established minimum IFR altitudes.*

c. The computer entry of a message suppressing or inhibiting E-MSAW alerts constitutes acknowledgment for the alert and indicates that appropriate action has or will be taken to resolve the situation.

5–13–3. COMPUTER ENTRY OF FLIGHT PLAN INFORMATION

a. Altitude

1. The altitude field(s) of the data block must always reflect the current status of the aircraft unless otherwise specified in an appropriate facility directive.

2. Unless otherwise specified in a facility directive or letter of agreement, do not modify assigned or interim altitude information prior to establishing communication with an aircraft that is outside your area of jurisdiction unless verbal coordination identifying who will modify the data block has been accomplished.

NOTE–
1. *A local interim altitude (LIA) can be used as a means of recording interfacility coordination.*

2. *Conflict probe in EDST does not probe for the LIA.*

3. Whenever an aircraft is cleared to maintain an altitude different from that in the flight plan database, enter into the computer one of the following:

(a) The new assigned altitude if the aircraft will (climb or descend to and) maintain the new altitude, or

(b) An interim altitude if the aircraft will (climb or descend to and) maintain the new altitude for a short period of time and subsequently be recleared to the altitude in the flight plan database or a new altitude or a new interim altitude, or

ERAM

(c) A procedure altitude if the aircraft is cleared to vertically navigate (VNAV) on a SID/STAR with published restrictions, or

(d) Where appropriate for interfacility hand-offs, an LIA when the assigned altitude differs from the coordinated altitude unless verbally coordinated or specified in a letter of agreement or facility directive.

NOTE–
A facility directive may be published, in accordance with JO 7210.3, paragraph 8–2–7, Waiver to Interim Altitude Requirements, deleting the interim altitude computer entry requirements of subparagraph 3.

b. Flight Plan Route Data

This information must not be modified outside of the controller's area of jurisdiction unless verbally coordinated or specified in a Letter of Agreement or Facility Directive.

5–13–4. ENTRY OF REPORTED ALTITUDE

Whenever Mode C altitude information is either not available or is unreliable, enter reported altitudes into the computer as follows:

NOTE–
Altitude updates are required to assure maximum accuracy in applying slant range correction formulas.

a. When an aircraft reaches the assigned altitude.

b. When an aircraft at an assigned altitude is issued a clearance to climb or descend.

c. A minimum of each 10,000 feet during climb to or descent from FL 180 and above.

5–13–5. SELECTED ALTITUDE LIMITS

The display of Mode C targets and limited data blocks is necessary for application of Merging Target Procedures. Sectors must ensure the display of Mode C targets and data blocks by entering appropriate altitude limits and display filters to include, as a minimum, the altitude stratum of the sector plus:

a. 1,200 feet above the highest and below the lowest altitude or flight level of the sector where 1,000 feet vertical separation is applicable; and

b. 2,200 feet above the highest and below the lowest flight level of the sector where 2,000 feet vertical separation is applicable.

NOTE–
1. *The data block, for purposes of this paragraph, must contain the Mode C altitude and call sign or beacon code at a minimum.*

2. *Exception to these requirements may be authorized for specific altitudes in certain ARTCC sectors if defined in appropriate facility directives and approved by the respective service area operations directorate.*

5–13–6. SECTOR ELIGIBILITY

The use of the OK function is allowed to override sector eligibility only when one of the following conditions is met:

a. Prior coordination is effected.

b. The flight is within the control jurisdiction of the sector.

5–13–7. COAST TRACKS

Do not use coast tracks in the application of either radar or nonradar separation criteria.

5–13–8. CONTROLLER INITIATED COAST TRACKS

a. Initiate coast tracks only in Flight Plan Aided Tracking (FLAT) mode, except "free" coast tracking may be used as a reminder that aircraft without corresponding computer-stored flight plan information are under your control.

NOTE–
1. *To ensure tracks are started in FLAT mode, perform a start track function at the aircraft's most current reported position, then immediately "force" the track into coast tracking by performing another start function with "CT" option in field 64. Making amendments to the stored route with trackball entry when the aircraft is rerouted, and repositioning the data block to coincide with the aircraft's position reports are methods of maintaining a coast track in FLAT mode.*

2. *EBUS does not have the capability to initiate coast tracks.*

b. Prior to initiating a coast track, ensure that a departure message or progress report corresponding with the aircraft's current position is entered into the computer.

c. As soon as practicable after the aircraft is in radar surveillance, initiate action to cause radar tracking to begin on the aircraft.

5–13–9. ERAM COMPUTER ENTRY OF HOLD INFORMATION

a. When an aircraft is issued holding instructions, the delay is ATC initiated, and the EFC is other than "no delay expected:"

1. Enter a hold message.

2. Maintain a paired track.

3. Enter an EFC time via a hold message, the Hold Data Menu, or the Hold View.

4. Enter non-published holding instructions via a hold message or the Hold Data Menu.

NOTE–
The ERAM hold message allows automatic calculation and reporting of aggregate delays.

b. Unless otherwise specified in a facility directive, verbally coordinate non-published holding instructions when handing off an aircraft in hold status to another ERAM sector.

c. An EFC time entered into the Hold Data Menu, Hold View, or the hold message constitutes coordination of the EFC between ERAM sectors.

REFERENCE–
FAA Order JO 7210.3, Para 8–2–9, ERAM Hold Information Facility Directive Requirements.

5–13–10. ERAM VISUAL INDICATOR OF SPECIAL ACTIVITY AIRSPACE (SAA) STATUS

Sector controllers shall ensure the situation display accurately reflects the status of all SAAs that impact their area of control responsibility. When "SAA DOWN" is displayed in the Outage View, manually create visual indicators on the situation display to reflect changes to airspace status.

NOTE–
The "SAA DOWN" message in the Outage View means that SAA status is no longer being updated. The status of each SAA at the time of the failure, whether "on" or "off", will continue to be displayed. Status changes will not be automatically updated on the display until the outage is resolved.

Section 14. Standard Terminal Automation Replacement System (STARS)–Terminal

5–14–1. APPLICATION

STARS may be used for identifying aircraft assigned a discrete beacon code, maintaining identity of targets, and performing handoffs of these targets between controllers. All procedures for the terminal domain related to air traffic control services using STARS apply to the FUSION target.

5–14–2. RESPONSIBILITY

This equipment does not relieve the controller of the responsibility to ensure proper identification, maintenance of identity, handoff of the correct target associated with the alphanumeric data, and separation of aircraft.

5–14–3. FUNCTIONAL USE

In addition to other uses specified herein, terminal automation may be used for the following functions:

a. Tracking.

b. Tagging.

c. Handoff.

d. Altitude information.

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

e. Coordination.

f. Ground speed.

g. Identification.

5–14–4. SYSTEM REQUIREMENTS

Use terminal automation systems as follows:

NOTE–
Locally developed procedures, operating instructions, and training material are required because of differences in equipment capability. Such locally developed procedures must be supplemental to those contained in this section and must be designed to make maximum use of the STARS equipment.

a. Inform all appropriate positions before terminating or reinstating use of the terminal automation system at a control position. When terminating the use of terminal automation systems, all pertinent flight data of that position must be transferred or terminated.

b. Inform other interfaced facilities of scheduled and unscheduled shutdowns.

c. Initiate a track/tag on all aircraft to the maximum extent possible. As a minimum, aircraft identification should be entered, and automated handoff functions should be used.

d. Assigned altitude, if displayed, must be kept current at all times. Climb and descent arrows, where available, must be used to indicate other than level flight.

e. When operating in FUSION mode, the assigned or pilot reported altitude must be displayed and kept current when the aircraft is in level flight.

f. The automatic altitude readout of an aircraft under another controller's jurisdiction may be used for vertical separation purposes without verbal coordination provided:

1. Operation is conducted using single-site radar coverage or when operating in FUSION mode.

2. Prearranged coordination procedures are contained in a facility directive in accordance with paragraph 5–4–9, Prearranged Coordination, and FAA Order JO 7210.3, paragraph 3–6–7, Prearranged Coordination.

3. Do not use Mode C to effect vertical separation within a Mosaic radar configuration.

5–14–5. INFORMATION DISPLAYED

a. Two-letter ICAO designators or three-letter designators, as appropriate, must be used unless program limitations dictate the use of a single letter alpha prefix.

b. Use of the inhibit/select functions to remove displayed information no longer required must be in accordance with local directives, which should ensure maximum required use of the equipment.

c. Information displayed must be in accordance with national orders and specified in local directives.

5–14–6. CA/MCI

a. When a CA or MCI alert is displayed, evaluate the reason for the alert without delay and take appropriate action.

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

b. If another controller is involved in the alert, initiate coordination to ensure an effective course of action. Coordination is not required when immediate action is dictated.

c. Suppressing/Inhibiting CA/MCI alert.

1. The suppress function may be used to suppress the display of a specific CA/MCI alert.

2. The inhibit function must only be used to inhibit the display of CA for aircraft routinely engaged in operations where approved separation criteria do not apply.

NOTE–
Examples of operations where approved separation criteria do not apply are ADC practice intercept operations and air shows.

3. Computer entry of a message suppressing a CA/MCI alert constitutes acknowledgment for the alert and signifies that appropriate action has or will be taken.

4. CA/MCI alert may not be suppressed or inhibited at or for another control position without being coordinated.

5–14–7. INHIBITING MINIMUM SAFE ALTITUDE WARNING (MSAW)

a. Inhibit MSAW processing of VFR aircraft and aircraft that cancel instrument flight rules (IFR) flight plans unless the pilot specifically requests otherwise.

REFERENCE–
FAA Order JO 7110.65, Para 10–2–7, VFR Aircraft in Weather Difficulty.
FAA Order JO 7110.65, Para 10–2–8, Radar Assistance to VFR Aircraft in Weather Difficulty.

b. A low altitude alert may be suppressed from the control position. Computer entry of the suppress message constitutes an acknowledgment for the alert and indicates that appropriate action has or will be taken.

5–14–8. TRACK SUSPEND FUNCTION

Use the track suspend function only when data block overlap in holding patterns or in proximity of the final approach create an unworkable situation. If necessary to suspend tracks, those which are not displaying automatic altitude readouts must be suspended. If the condition still exists, those displaying automatic altitude readouts may then be suspended.

Section 4. Approaches

7–4–1. VISUAL APPROACH

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

a. At airports with an operating control tower, aircraft executing a go–around may be instructed to enter the traffic pattern for landing and an altitude assignment is not required. The pilot is expected to climb to pattern altitude and is required to maintain terrain and obstruction clearance. ATC must maintain applicable separation from other aircraft.

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

REFERENCE–
FAA Order JO 7110.65, Para 2–1–4, Operational Priority.
FAA Order JO 7110.65, Para 2–1–20, Wake Turbulence Cautionary Advisories.
FAA Order JO 7110.65, Para 3–10–2, Forwarding Approach Information by Nonapproach Control Facilities.
FAA Order JO 7110.65, Para 7–2–1, Visual Separation.
FAA Order JO 7110.65, Para 7–4–4, Approaches to Multiple Runways.
FAA Order JO 7210.3, Para 10–3–15, Go–around/Missed Approach.
P/CG Term – Go–around.
AIM, Para 5–4–23, Visual Approach.

7–4–2. VECTORS FOR VISUAL APPROACH

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

PHRASEOLOGY–
(Ident) FLY HEADING

or

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

(If appropriate)

WEATHER NOT AVAILABLE.

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

REFERENCE–
FAA Order JO 7110.65, Para 5–9–1, Vectors to Final Approach Course.
FAA Order JO 7110.65, Para 7–2–1, Visual Separation.
FAA Order JO 7110.65, Para 7–4–3, Clearance for Visual Approach.
FAA Order JO 7110.65, Para 7–4–4, Approaches to Multiple Runways.
FAA Order JO 7110.65, Para 7–6–7, Sequencing.
FAA Order JO 7110.65, Para 7–7–3, Separation.

7–4–3. CLEARANCE FOR VISUAL APPROACH

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

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

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

1. The airport or the runway in sight at airports with operating control towers.

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

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

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

c. Clear an aircraft for a visual approach when:

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

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

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

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

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

PHRASEOLOGY–
(at locations with an operating control tower)

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

or

(at locations without an operating control tower)

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

(and if appropriate)

WEATHER NOT AVAILABLE

or

VERIFY THAT YOU HAVE THE (airport) WEATHER.

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

d. All aircraft following a heavy, or a small aircraft following a B757, must be informed of the airplane manufacturer and/or model.

EXAMPLE–
"Cessna Three Four Juliet, following a Boeing 757, 12 o'clock, six miles."

or

"Cessna Three Four Juliet, following a Seven fifty seven, 12 o'clock, six miles."

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

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

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

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

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

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

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

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

7–4–4. APPROACHES TO MULTIPLE RUNWAYS

a. All aircraft must be informed that approaches are being conducted to parallel, intersecting, or converging runways. This may be accomplished through use of the ATIS.

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

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

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

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

1. Parallel runways separated by less than 2,500 feet. Unless approved separation is maintained, an

aircraft must report sighting a preceding aircraft making an approach (instrument or visual) to the adjacent parallel runway. When an aircraft reports another aircraft in sight on the adjacent final approach course and visual separation is applied, controllers must advise the succeeding aircraft to maintain visual separation. Do not permit an aircraft to overtake another aircraft when wake turbulence separation is required.

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

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

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

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

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

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

(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 the flight paths do not intersect, visual approaches may be conducted simultaneously provided that approved separation is maintained until one of the aircraft has been issued and the pilot has acknowledged receipt of the visual approach clearance.

(b) 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) are met.

(c) Provided the flight paths do not intersect, when the provisions of subparagraphs (a) and (b) are met, it is not necessary to apply any other type of separation with aircraft on the adjacent final approach course.

(d) Each aircraft must either be assigned a heading or established on a direct course to a fix or cleared on an RNAV/instrument approach procedure which will allow the aircraft to intercept the extended centerline of the runway at an angle not greater than 30 degrees.

NOTE–

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

2. *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.*

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

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

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

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

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

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

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

a. There is an operating control tower.

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

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

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

PHRASEOLOGY−
(Ident) CLEARED (name of CVFP) APPROACH.

7−4−6. CONTACT APPROACH

Clear an aircraft for a contact approach only if the following conditions are met:

a. The pilot has requested it.

NOTE−
When executing a contact approach, the pilot is responsible for maintaining the required flight visibility, cloud clearance, and terrain/obstruction clearance. Unless otherwise restricted, the pilot may find it necessary to descend, climb, and/or fly a circuitous route to the airport to maintain cloud clearance and/or terrain/obstruction clearance. It is not in any way intended that controllers will initiate or suggest a contact approach to a pilot.

b. The reported ground visibility is at least 1 statute mile.

c. A standard or special instrument approach procedure has been published and is functioning for the airport of intended landing.

d. Approved separation is applied between aircraft so cleared and other IFR or SVFR aircraft. When applying vertical separation, do not assign a fixed altitude but clear the aircraft at or below an altitude which is at least 1,000 feet below any IFR traffic but not below the minimum safe altitude prescribed in 14 CFR Section 91.119.

NOTE−
14 CFR Section 91.119 specifies the minimum safe altitude to be flown:
(a) Anywhere.
(b) Over congested areas.
(c) Other than congested areas. To provide for an emergency landing in the event of power failure and without undue hazard to persons or property on the surface.
(d) Helicopters. May be operated at less than the minimums prescribed in (b) and (c) above if the operation is conducted without hazard to persons or property on the surface.

e. An alternative clearance is issued when weather conditions are such that a contact approach may be impracticable.

PHRASEOLOGY–
CLEARED CONTACT APPROACH,

And if required,
AT OR BELOW (altitude) (routing).

IF NOT POSSIBLE, (alternative procedures), AND ADVISE.

Section 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 non-radar 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 non-radar, 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:

1. Between a SVFR helicopter and an arriving or departing IFR aircraft:

(a) $^1/_2$ mile. If the IFR aircraft is less than 1 mile from the landing airport.

(b) 1 mile. If the IFR aircraft is 1 mile or more from the airport.

2. 1 mile between SVFR helicopters. This separation may be reduced to 200 feet if:

(a) Both helicopters are departing simultaneously on courses that diverge by at least 30 degrees and:

(1) The tower can determine this separation by reference to surface markings; or

(2) One of the departing helicopters is instructed to remain at least 200 feet from the other.

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.*

REFERENCE–
FAA Order JO 7110.65, Para 2–1–4, Operational Priority.
FAA Order JO 7110.65, Para 7–2–1, Visual Separation.
FAA Order JO 7110.65, Para 7–5–4, Altitude Assignment.
FAA Order JO 7110.65, Chapter 6, Nonradar.
FAA Order JO 7210.3, Para 10-5-3, Functional Use of Certified Tower Radar Displays.

7–5–4. ALTITUDE ASSIGNMENT

Do not assign a fixed altitude when applying vertical separation, but clear the SVFR aircraft at or below an altitude which is at least 500 feet below any conflicting IFR traffic but not below the MSA prescribed in 14 CFR Section 91.119.

PHRASEOLOGY–
MAINTAIN SPECIAL V–F–R CONDITIONS AT OR BELOW (altitude).

NOTE–
1. *SVFR aircraft are not assigned fixed altitudes to*

maintain because of the clearance from clouds requirement.

2. *The MSAs are:*

(a) Over congested areas, an altitude at least 1,000 feet above the highest obstacle, and

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

(c) Helicopters may be operated at less than the minimum altitudes prescribed in (a) and (b) above.

REFERENCE–
FAA Order JO 7110.65, Para 2–1–4, Operational Priority.
FAA Order JO 7110.65, Para 5–6–1, Application.
14 CFR Section 91.119, Minimum Safe Altitudes: General.

7–5–5. LOCAL OPERATIONS

a. Authorize local SVFR operations for a specified period (series of landings and takeoffs, etc.) upon request if the aircraft can be recalled when traffic or weather conditions require. Where warranted, LOAs may be consummated.

PHRASEOLOGY–
LOCAL SPECIAL V–F–R OPERATIONS IN THE IMMEDIATE VICINITY OF (name) AIRPORT ARE AUTHORIZED UNTIL (time). MAINTAIN SPECIAL V–F–R CONDITIONS.

REFERENCE–
FAA Order JO 7210.3, Para 4–3–2, Appropriate Subjects.

b. Control facilities may also authorize an FSS to transmit SVFR clearances so that only one aircraft at a time operates in the Class B, Class C, Class D, or Class E surface areas unless pilots agree that they will maintain visual separation with other aircraft operating in the Class B, Class C, Class D, or Class E surface areas. Such authorization concerning visual separation by pilots must be contained in a LOA between the control facility and the FSS.

REFERENCE–
FAA Order JO 7210.3, Para 4–3–3, Developing LOA.
FAA Order JO 7110.65, Para 2–1–4, Operational Priority.

7–5–6. CLIMB TO VFR

Authorize an aircraft to climb to VFR upon request if the only weather limitation is restricted visibility.

PHRASEOLOGY–
CLIMB TO V–F–R WITHIN (name) SURFACE AREA/WITHIN (a specified distance) MILES FROM (airport name) AIRPORT, MAINTAIN SPECIAL V–F–R CONDITIONS UNTIL REACHING V–F–R.

REFERENCE–
FAA Order JO 7110.65, Para 2–1–4, Operational Priority.
FAA Order JO 7110.65, Para 2–4–22, Airspace Classes.
FAA Order JO 7110.65, Para 7–5–1, Authorization.

7–5–7. GROUND VISIBILITY BELOW 1 MILE

14 CFR Part 91 does not prohibit helicopter SVFR flight when the visibility is less than 1 mile. Treat requests for SVFR fixed–wing operations as follows when the ground visibility is officially reported at an airport as less than 1 mile:

a. Inform departing aircraft that ground visibility is less than 1 mile and that a clearance cannot be issued.

b. Inform arriving aircraft, operating outside of a Class B, Class C, Class D, or Class E surface area, that ground visibility is less than 1 mile and that, unless an emergency exists, a clearance cannot be issued.

c. Inform arriving aircraft, operating VFR/SVFR within a Class B, Class C, Class D, or Class E surface area, that ground visibility is less than 1 mile and request the pilot to advise intentions.

PHRASEOLOGY–
(Name of airport) VISIBILITY LESS THAN 1 MILE. ADVISE INTENTIONS.

NOTE–
Clear an aircraft to land at an airport with an operating control tower, traffic permitting, if the pilot reports the airport in sight. The pilot is responsible to continue to the airport or exit the surface area. 14 CFR Section 91.157 prohibits VFR aircraft (other than helicopters) from landing at any airport within a surface area when ground visibility is less than 1 mile. A pilot could inadvertently encounter conditions that are below SVFR minimums after entering a surface area due to rapidly changing weather. The pilot is best suited to determine the action to be taken since pilots operating under SVFR between sunrise and sunset are not required to be instrument rated, and the possibility exists that flight visibility may not be the same as ground visibility. 14 CFR Section 91.3 authorizes a pilot encountering an inflight emergency requiring immediate action to deviate from any rule of 14 CFR Part 91 to the extent required to meet that emergency. Flight into adverse weather conditions may require the pilot to execute the emergency authority granted in 14 CFR Section 91.3 and continue inbound to land.

d. Authorize scheduled air carrier aircraft in the U.S. to conduct operations if ground visibility is not less than $^1/_2$ statute mile.

NOTE–
14 CFR Part 121 permits landing or takeoff by domestic scheduled air carriers where a local surface restriction to visibility is not less than 1/2 statute mile, provided all turns after takeoff or before landing and all flights beyond 1 statute mile from the airport boundary can be accomplished above or outside the area so restricted. The

pilot is solely responsible for determining if the nature of the visibility restriction will permit compliance with the provisions of 14 CFR Part 121.

e. Clear an aircraft to fly through the Class B, Class C, Class D, or Class E surface area if the aircraft reports flight visibility is at least 1 statute mile.

REFERENCE–
FAA Order JO 7110.65, Para 2–1–4, Operational Priority.
FAA Order JO 7110.65, Para 7–5–1, Authorization.

7–5–8. FLIGHT VISIBILITY BELOW 1 MILE

Treat requests for SVFR fixed–wing operations as follows when weather conditions are not reported at an airport and the pilot advises the flight visibility is less than 1 mile:

NOTE–
14 CFR Part 91 prescribes the visibility for basic VFR and SVFR operations as the official reported ground visibility at airports where provided and landing or takeoff "flight visibility" where there is no official reported ground visibility.

a. Inform departing aircraft that a clearance cannot be issued.

b. Inform arriving aircraft operating outside of a Class B, Class C, Class D or Class E surface area that a clearance cannot be issued unless an emergency exists.

c. Request the intentions of an arriving aircraft operating within a Class B, Class C, Class D, or Class E surface area.

NOTE–
Clear an aircraft to land at an airport with an operating control tower, traffic permitting, if the pilot reports the airport in sight. The pilot is responsible to continue to the airport or exit the surface area. 14 CFR Section 91.157 prohibits VFR aircraft (other than helicopters) from landing at any airport within a surface area when flight visibility is less than 1 mile. A pilot could inadvertently encounter conditions that are below SVFR minimums after entering a surface area due to rapidly changing weather. The pilot is best suited to determine the action to be taken since pilots operating under SVFR between sunrise and sunset are not required to be instrument rated, and the possibility exists that flight visibility may not be the same as ground visibility. 14 CFR Section 91.3 authorizes a pilot encountering an inflight emergency requiring immediate action to deviate from any rule of 14 CFR Part 91 to the extent required to meet that emergency. Flight into adverse weather conditions may require the pilot to execute the emergency authority granted in 14 CFR Section 91.3 and continue inbound to land.

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

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.

Section 3. Longitudinal Separation

8–3–1. APPLICATION

a. Longitudinal separation must be applied so that the spacing between the estimated positions of the aircraft being separated is never less than a prescribed minimum.

NOTE–
Consider separation to exist when the estimated positions of the aircraft being separated are never less than a prescribed minimum.

b. In situations where one aircraft requires a different time–based longitudinal standard than another, apply the larger of the two standards between the aircraft concerned.

c. Longitudinal separation expressed in distance may be applied as prescribed in Chapter 6, Nonradar.

d. In situations where an update to a control estimate indicates that the minimum being applied no longer exists, controllers must ensure that separation is reestablished. Issue traffic information as necessary.

8–3–2. SEPARATION METHODS

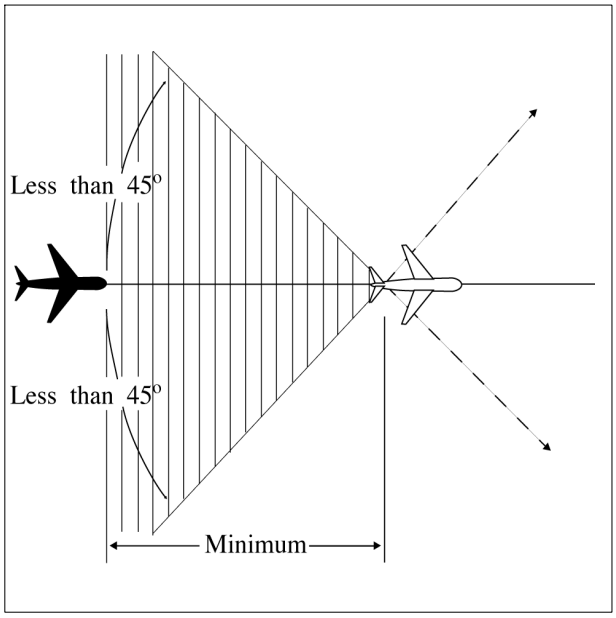
a. For the purpose of application of longitudinal separation, the terms *same track* must be considered identical to *same course*, *reciprocal tracks* must be considered identical to *reciprocal courses*, and *crossing tracks*, must be considered identical to *crossing courses*.

NOTE–
Refer to paragraph 1–2–2, Course Definitions.

b. Separate aircraft longitudinally in accordance with the following:

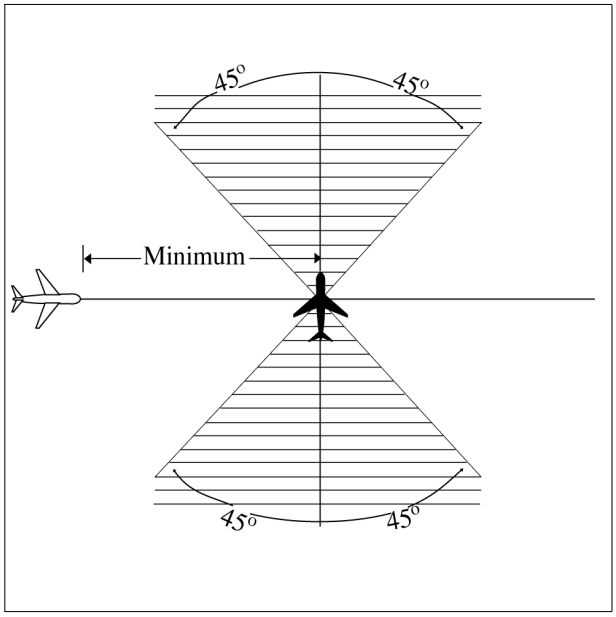
1. Same track. Ensure that the estimated spacing between aircraft is not less than the applicable minimum required. (See FIG 8–3–1.)

FIG 8–3–1
Same Courses



2. Crossing tracks. Ensure that the estimated spacing at the point of intersection is not less than the applicable minimum required. (See FIG 8–3–2.)

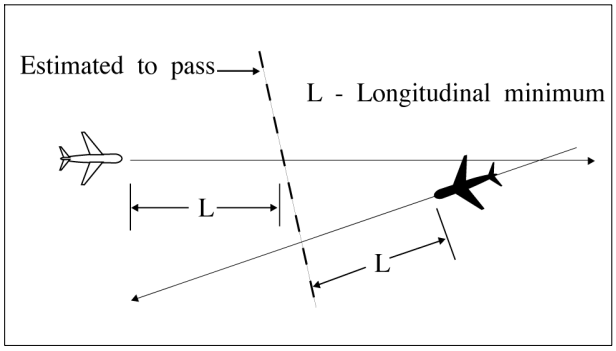
FIG 8–3–2
Crossing Courses



3. Reciprocal tracks:

(a) Ensure that aircraft are vertically separated for a time interval equal to the applicable minimum required before and after the aircraft are estimated to pass. (See FIG 8–3–3.)

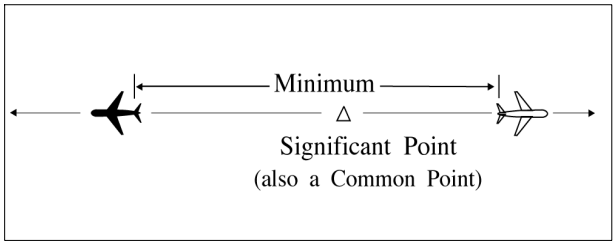
FIG 8–3–3
Reciprocal Courses



(b) Vertical separation may be discontinued after one of the following conditions is met:

(1) Both aircraft have reported passing a significant point and the aircraft are separated by at least the applicable minimum required for the same direction longitudinal spacing; (See FIG 8–3–4.) or

FIG 8–3–4
Vertical Separation



(2) Both aircraft have reported passing ground-based NAVAIDs or DME fixes indicating that they have passed each other.

8–3–3. MACH NUMBER TECHNIQUE

The use of Mach number technique allows for the application of reduced longitudinal separation minima. The following conditions must be met when the Mach number technique is being applied:

a. Aircraft Types: Turbojet aircraft only.

b. Routes:

1. The aircraft follow the same track or continuously diverging tracks, and

2. The aircraft concerned have reported over a common point; or

3. 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,

4. 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.

c. Altitudes: The aircraft concerned are in level, climbing or descending flight.

d. Mach Number Assignment:

1. A Mach number (or, when appropriate, a range of Mach numbers) must be issued to each aircraft unless otherwise prescribed on the basis of ICAO regional agreement.

NOTE–
1. *The application of Mach number technique requires pilots to strictly adhere to the last assigned Mach number (or range of Mach numbers), even during climbs and descents, unless revised by ATC. Turbojet aircraft must request ATC approval before making any changes. If it is essential to make an immediate temporary change in the Mach number (e.g., due to turbulence), ATC must be notified as soon as possible that such a change has been made.*

2. *When it is necessary to issue crossing restrictions to ensure the appropriate time interval, it may be impossible for an aircraft to comply with both the clearance to meet the crossing restrictions and the clearance to maintain a single, specific Mach number.*

REFERENCE–
ICAO DOC 9426–AN/924, Part II, Section 2, Para 2.3.4, Para 2.4.7, and Para 2.5.3.

EXAMPLE–
"Maintain Mach point eight four or greater."
"Maintain Mach point eight three or less."
"Maintain Mach point eight two or greater; do not exceed Mach point eight four."

e. Longitudinal Minima:

When the Mach number technique is applied, minimum longitudinal separation must be:

1. *10 minutes*, provided that:

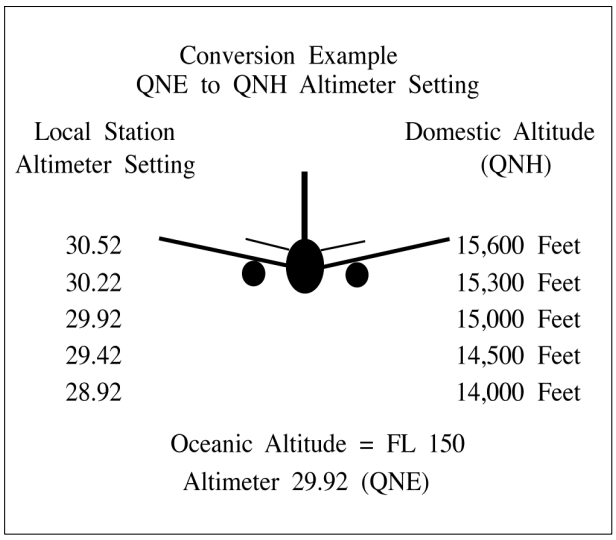
(a) The preceding aircraft maintains a Mach number equal to, or greater than that maintained by the following aircraft; or

Section 5. Offshore/Oceanic Transition Procedures

8–5–1. ALTITUDE/FLIGHT LEVEL TRANSITION

When vertical separation is applied between aircraft crossing the offshore/oceanic airspace boundary below FL 180, control action must be taken to ensure that differences between the standard altimeter setting (QNE) and local altimeter setting (QNH) do not compromise separation. (See FIG 8–5–1.)

FIG 8–5–1
Standard and Local Altimeter Setting Differences



8–5–2. COURSE DIVERGENCE

When aircraft are entering oceanic airspace, separation will exist in oceanic airspace when:

a. Aircraft are established on courses that diverge by at least 15 degrees until oceanic lateral separation is established, and

b. The aircraft are horizontally radar separated and separation is increasing at the edge of known radar coverage.

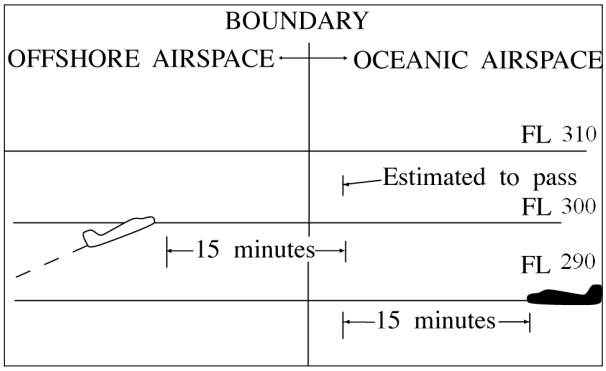
8–5–3. OPPOSITE DIRECTION

When transitioning from an offshore airspace area to oceanic airspace, an aircraft may climb through opposite direction oceanic traffic provided vertical separation above that traffic is established:

a. Before the outbound crosses the offshore/oceanic boundary; and

b. 15 minutes before the aircraft are estimated to pass. (See FIG 8–5–2.)

FIG 8–5–2
Transitioning From Offshore to Oceanic Airspace Opposite Direction



8–5–4. SAME DIRECTION

When transitioning from an offshore airspace area to oceanic airspace or while within oceanic airspace, apply 5 minutes minimum separation when a following aircraft on the same course is climbing through the altitude of the preceding aircraft if the following conditions are met:

a. The preceding aircraft is level at the assigned altitude and is maintaining a speed equal to or greater than the following aircraft; and

b. The minimum of *5 minutes* is maintained between the preceding and following aircraft; and

c. The following aircraft is separated by not more than 4,000 feet from the preceding aircraft when the climb clearance is issued; and

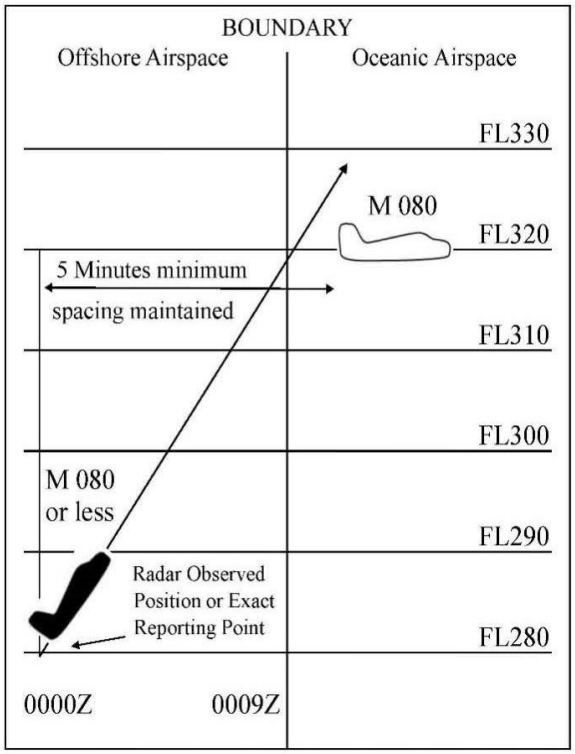
d. The following aircraft commences climb within *10 minutes* after passing:

1. An exact reporting point (DME fix or intersection formed from NAVAIDs) which the preceding aircraft has reported; or

2. A radar observed position over which the preceding aircraft has been observed; and

e. The following aircraft is in direct communication with air traffic control until vertical separation is established. (See FIG 8–5–3.)

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 non-radar 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 non-radar 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 2. Emergency Assistance

10–2–1. INFORMATION REQUIREMENTS

a. Start assistance as soon as enough information has been obtained upon which to act. Information requirements will vary, depending on the existing situation. Minimum required information for inflight emergencies is:

NOTE–
In the event of an ELT signal see paragraph 10–2–10, Emergency Locator Transmitter (ELT) Signals.

1. Aircraft identification and type.

2. Nature of the emergency.

3. Pilot's desires.

b. After initiating action, obtain the following items or any other pertinent information from the pilot or aircraft operator, as necessary:

NOTE–
1. *Emergency Autoland systems may not provide all of the required information for emergencies. Use the information provided to develop an appropriate course of action to assist the aircraft.*

2. *If an emergency has been declared by an Emergency Autoland system, transmissions to the aircraft may go unanswered.*

3. *Normally, do not request this information from military fighter–type aircraft that are at low altitudes (for example, on approach, immediately after departure, on a low level route). However, request the position of an aircraft that is not visually sighted or displayed on radar if the location is not given by the pilot.*

1. Aircraft altitude.

2. Fuel remaining in time.

3. Pilot reported weather.

4. Pilot capability for IFR flight.

5. Time and place of last known position.

6. Heading since last known position.

7. Airspeed.

8. Navigation equipment capability.

9. NAVAID signals received.

10. Visible landmarks.

11. Aircraft color.

12. Number of people on board.

13. Point of departure and destination.

14. Emergency equipment on board.

10–2–2. FREQUENCY CHANGES

Although 121.5 MHz and 243.0 MHz are emergency frequencies, it might be best to keep the aircraft on the initial contact frequency. Change frequencies only when there is a valid reason.

10–2–3. AIRCRAFT ORIENTATION

Orientate an aircraft by the means most appropriate to the circumstances. Recognized methods include:

a. Radar.

b. NAVAIDs.

c. Pilotage.

d. Sighting by other aircraft.

10–2–4. ALTITUDE CHANGE FOR IMPROVED RECEPTION

When you consider it necessary and if weather and circumstances permit, recommend that the aircraft maintain or increase altitude to improve communications or radar.

NOTE–
Aircraft with high-bypass turbofan engines (such as B747) encountering volcanic ash clouds have experienced total loss of power to all engines. Damage to engines due to volcanic ash ingestion increases as engine power is increased, therefore, climb while in the ash cloud is to be avoided where terrain permits.

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

10–2–5. EMERGENCY SITUATIONS

Consider that an aircraft emergency exists and inform the RCC or ARTCC if:

NOTE–
USAF facilities are only required to notify the ARTCC.

a. An emergency is declared by any of the following:

1. The pilot.

2. Facility personnel.

3. Officials responsible for the operation of the aircraft.

4. A system–generated transmission from an aircraft.

b. There is unexpected loss of radar contact and radio communications with any IFR or VFR aircraft.

c. Reports indicate it has made a forced landing, is about to do so, or its operating efficiency is so impaired that a forced landing will be necessary.

d. Reports indicate the crew has abandoned the aircraft or is about to do so.

e. An emergency transponder code is displayed or reported.

NOTE–
EN ROUTE. ERAM: Code 7700 causes an emergency indicator to blink in the data block.

f. Intercept or escort aircraft services are required.

g. The need for ground rescue appears likely.

h. An Emergency Locator Transmitter (ELT) signal is heard or reported.

REFERENCE–
FAA Order JO 7110.65, Para 10–1–3 , Providing Assistance.
FAA Order JO 7110.65, Para 10–2–10 , Emergency Locator Transmitter (ELT) Signals.

10–2–6. HIJACKED AIRCRAFT

Hijack attempts or actual events are a matter of national security and require special handling. FAA Order JO 7610.4, Special Operations, describes additional procedures and reporting requirements that must be followed.

REFERENCE–
FAA Order JO 7610.4, Chapter 7, Procedures for Handling Suspicious Flight Situations and Hijacked Aircraft.
FAA Order JO 7110.65, Para 5–2–11 , Code Monitor.

a. When a pilot notifies ATC verbally of a hijacking situation, assign code 7500 to the subject aircraft.

PHRASEOLOGY–
(Identification) SQUAWK SEVEN FIVE ZERO ZERO.

1. Should the pilot acknowledge assignment of code 7500 without further communication, or fail to acknowledge or communicate further, assume that the flight is being subject to hijack.

2. No reference to the hijacking must be made in subsequent communications unless initiated by the pilot, or unless directed by the Domestic Events Network (DEN) Air Traffic Security Coordinator.

3. Immediately inform the operations manager, supervisor or CIC.

NOTE–
When an aircraft squawks code 7500, ERAM will display "HIJK," and STARS/MEARTS will display "HJ" in the data block.

b. When a pilot notifies ATC of a hijacking situation by squawking code 7500, use the following phraseology to verify that the aircrew intentionally selected code 7500.

PHRASEOLOGY–
(Identification)(name of facility) VERIFY SQUAWKING SEVEN FIVE ZERO ZERO.

1. Should the pilot fail to acknowledge or communicate further, assume that the flight is being subject to hijack.

2. No reference to the hijacking must be made in subsequent communications unless initiated by the pilot, or unless directed by the DEN Air Traffic Security Coordinator.

3. Immediately inform the operations manager, supervisor or CIC.

10–2–7. VFR AIRCRAFT IN WEATHER DIFFICULTY

a. If VFR aircraft requests assistance when it encounters or is about to encounter IFR weather conditions, determine the facility best able to provide service. If a frequency change is necessary, advise the pilot of the reason for the change, and request the aircraft contact the appropriate control facility. Inform that facility of the situation. If the aircraft is unable to communicate with the control facility, relay information and clearances.

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

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

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

10–2–8. RADAR ASSISTANCE TO VFR AIRCRAFT IN WEATHER DIFFICULTY

a. If a VFR aircraft requests radar assistance when it encounters or is about to encounter IFR weather conditions, ask the pilot if he/she is qualified for and capable of conducting IFR flight.

b. If the pilot states he/she is qualified for and capable of IFR flight, request him/her to file an IFR flight plan and then issue clearance to destination airport, as appropriate.

c. If the pilot states he/she is not qualified for or not capable of conducting IFR flight, or if he/she refuses to file an IFR flight plan, take whichever of the following actions is appropriate:

1. Inform the pilot of airports where VFR conditions are reported, provide other available pertinent weather information, and ask if he/she will elect to conduct VFR flight to such an airport.

2. If the action in subparagraph 1 above is not feasible or the pilot declines to conduct VFR flight to another airport, provide radar assistance if the pilot:

(a) Declares an emergency.

(b) Refuses to declare an emergency and you have determined the exact nature of the radar services the pilot desires.

3. If the aircraft has already encountered IFR conditions, inform the pilot of the appropriate terrain/obstacle clearance minimum altitude. If the aircraft is below appropriate terrain/obstacle clearance minimum altitude and sufficiently accurate position information has been received or radar identification is established, furnish a heading or radial on which to climb to reach appropriate terrain/obstacle clearance minimum altitude.

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

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

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

10–2–9. RADAR ASSISTANCE TECHNIQUES

Use the following techniques to the extent possible when you provide radar assistance to a pilot not qualified to operate in IFR conditions:

a. Avoid radio frequency changes except when necessary to provide a clear communications channel.

b. Make turns while the aircraft is in VFR conditions so it will be in a position to fly a straight course while in IFR conditions.

c. Have pilot lower gear and slow aircraft to approach speed while in VFR conditions.

d. Avoid requiring a climb or descent while in a turn if in IFR conditions.

e. Avoid abrupt maneuvers.

f. Vector aircraft to VFR conditions.

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

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

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

10–2–10. EMERGENCY LOCATOR TRANSMITTER (ELT) SIGNALS

When an ELT signal is heard or reported:

a. *EN ROUTE.* Notify the Rescue Coordination Center (RCC).

NOTE–
FAA Form 7210–8, ELT INCIDENT, contains standardized format for coordination with the RCC.

REFERENCE–
FAA Order JO 7210.3, Para 9–3–1, FAA Form 7210–8, ELT Incident.

b. *TERMINAL.* Notify the ARTCC which will coordinate with the RCC.

NOTE–
1. *Operational ground testing of emergency locator*

transmitters (ELTs) has been authorized during the first 5 minutes of each hour. To avoid confusing the tests with an actual alarm, the testing is restricted to no more than three audio sweeps.

2. *Controllers can expect pilots to report aircraft position and time the signal was first heard, aircraft position and time the signal was last heard, aircraft position at maximum signal strength, flight altitude, and frequency of the emergency signal (121.5/243.0). (See AIM, paragraph 6–2–4, Emergency Locator Transmitter (ELT).)*

c. *TERMINAL.* Attempt to obtain fixes or bearings on the signal.

d. Solicit the assistance of other aircraft known to be operating in the signal area.

e. *TERMINAL.* Forward fixes or bearings and any other pertinent information to the ARTCC.

NOTE–
Fix information in relation to a VOR or VORTAC (radial-distance) facilitates accurate ELT plotting by RCC and should be provided when possible.

f. *EN ROUTE.* When the ELT signal strength indicates the signal may be emanating from somewhere on an airport or vicinity thereof, notify the on-site technical operations personnel and the Regional Operations Center (ROC) for their actions. This action is in addition to the above.

g. *TERMINAL.* When the ELT signal strength indicates the signal may be emanating from somewhere on the airport or vicinity thereof, notify the on-site technical operations personnel and the ARTCC for their action. This action is in addition to the above.

h. Air traffic personnel must not leave their required duty stations to locate an ELT signal source.

NOTE–
Portable handcarried receivers assigned to air traffic facilities (where no technical operations personnel are available) may be loaned to responsible airport personnel or local authorities to assist in locating the ELT signal source.

i. *EN ROUTE.* Notify the RCC and the ROC if signal source is located/terminated.

j. *TERMINAL.* Notify the ARTCC if signal source is located/terminated.

REFERENCE–
FAA Order JO 7110.65, Para 10–1–4, Responsibility.
FAA Order JO 7110.65, Para 10–2–1, Information Requirements.

10–2–11. AIRCRAFT BOMB THREATS

a. When information is received from any source that a bomb has been placed on, in, or near an aircraft for the purpose of damaging or destroying such aircraft, notify your supervisor or the facility air traffic manager. If the threat is general in nature, handle it as a "Suspicious Activity." When the threat is targeted against a specific aircraft and you are in contact with the suspect aircraft, take the following actions as appropriate:

REFERENCE–
FAA Order JO 7610.4, Chapter 7, Procedures for Handling Suspicious Flight Situations and Hijacked Aircraft.

1. Advise the pilot of the threat.

2. Inform the pilot that technical assistance can be obtained from an FAA aviation explosives expert.

NOTE–
An FAA aviation explosive expert is on call at all times and may be contacted by calling the FAA Operations Center, Washington, DC, Area Code 202–267–3333, ETN 521–0111, or DSN 851–3750. Technical advice can be relayed to assist civil or military air crews in their search for a bomb and in determining what precautionary action to take if one is found.

3. Ask the pilot if he/she desires to climb or descend to an altitude that would equalize or reduce the outside air pressure/existing cabin air pressure differential. Issue or relay an appropriate clearance considering MEA, MOCA, MRA, and weather.

NOTE–
Equalizing existing cabin air pressure with outside air pressure is a key step which the pilot may wish to take to minimize the damage potential of a bomb.

4. Handle the aircraft as an emergency and/or provide the most expeditious handling possible with respect to the safety of other aircraft, ground facilities, and personnel.

NOTE–
Emergency handling is discretionary and should be based on the situation. With certain types of threats, plans may call for a low-key action or response.

5. Issue or relay clearances to a new destination if requested.

6. When a pilot requests technical assistance or if it is apparent that a pilot may need such assistance, do NOT suggest what actions the pilot should take concerning a bomb, but obtain the following information and notify your supervisor who will contact the FAA aviation explosives expert:

NOTE–
This information is needed by the FAA aviation explosives expert so that he/she can assess the situation and make immediate recommendations to the pilot. The aviation explosives expert may not be familiar with all military aircraft configurations but he/she can offer technical assistance which would be beneficial to the pilot.

(a) Type, series, and model of the aircraft.

(b) Precise location/description of the bomb device if known.

(c) Other details which may be pertinent.

NOTE–
The following details may be of significance if known, but it is not intended that the pilot should disturb a suspected bomb/bomb container to ascertain the information: The altitude or time set for the bomb to explode, type of detonating action (barometric, time, anti-handling, remote radio transmitter), power source (battery, electrical, mechanical), type of initiator (blasting cap, flash bulb, chemical), and the type of explosive/incendiary charge (dynamite, black powder, chemical).

b. When a bomb threat involves an aircraft on the ground and you are in contact with the suspect aircraft, take the following actions in addition to those discussed in the preceding paragraphs which may be appropriate:

1. If the aircraft is at an airport where tower control or FSS advisory service is not available, or if the pilot ignores the threat at any airport, recommend that takeoff be delayed until the pilot or aircraft operator establishes that a bomb is not aboard in accordance with 14 CFR Part 121. If the pilot insists on taking off and in your opinion the operation will not adversely affect other traffic, issue or relay an ATC clearance.

REFERENCE–
14 CFR Section 121.538, Airplane Security.

2. Advise the aircraft to remain as far away from other aircraft and facilities as possible, to clear the runway, if appropriate, and to taxi to an isolated or designated search area. When it is impractical or if the pilot takes an alternative action; e.g., parking and off-loading immediately, advise other aircraft to remain clear of the suspect aircraft by at least 100 yards if able.

NOTE–
Passenger deplaning may be of paramount importance and must be considered before the aircraft is parked or moved away from service areas. The decision to use ramp facilities rests with the pilot, aircraft operator/airport manager.

c. If you are unable to inform the suspect aircraft of a bomb threat or if you lose contact with the aircraft, advise your supervisor and relay pertinent details to other sectors or facilities as deemed necessary.

d. When a pilot reports the discovery of a bomb or suspected bomb on an aircraft which is airborne or on the ground, determine the pilot's intentions and comply with his/her requests in so far as possible. Take all of the actions discussed in the preceding paragraphs which may be appropriate under the existing circumstances.

e. The handling of aircraft when a hijacker has or is suspected of having a bomb requires special considerations. Be responsive to the pilot's requests and notify supervisory personnel. Apply hijacking procedures and offer assistance to the pilot according to the preceding paragraphs, if needed.

10–2–12. EXPLOSIVE DETECTION K–9 TEAMS

Take the following actions should you receive an aircraft request for the location of the nearest explosive detection K–9 team.

REFERENCE–
FAA Order JO 7210.3, Para 2–1–12, Explosives Detection K–9 Teams.

a. Obtain the aircraft identification and position and advise your supervisor of the pilot request.

b. When you receive the nearest location of the explosive detection K–9 team, relay the information to the pilot.

c. If the aircraft wishes to divert to the airport location provided, obtain an estimated arrival time from the pilot and advise your supervisor.

10–2–13. MANPADS ALERT

When a threat or attack from Man–Portable Air Defense Systems (MANPADS) is determined to be real, notify and advise aircraft as follows:

a. Do not withhold landing clearance. To the extent possible, issue information on MANPADS threats, confirmed attacks, or post–event activities in time for it to be useful to the pilot. The pilot or parent company will determine the pilot's actions.

b. MANPADS information will be disseminated via the ATIS and/or controller–to–pilot transmissions.

c. Disseminate via controller–to–pilot transmission until the appropriate MANPADS information is broadcast via the ATIS and pilots indicate they have received the appropriate ATIS code. MANPADS information will include nature and location of threat or incident, whether reported or observed and by whom, time (if known), and when transmitting to an individual aircraft, a request for pilot's intentions.

PHRASEOLOGY–
ATTENTION (aircraft identification), MANPADS ALERT. EXERCISE EXTREME CAUTION. MANPADS THREAT/ATTACK/POST–EVENT ACTIVITY OBSERVED/REPORTED BY (reporting agency) (location) AT (time, if known). (When transmitting to an individual aircraft) SAY INTENTIONS.

EXAMPLE–
"Attention Eastern Four Seventeen, MANPADS alert. Exercise extreme caution. MANPADS threat reported by TSA, LaGuardia vicinity. Say intentions."

"Attention all aircraft, MANPADS alert. Exercise extreme caution. MANPADS post–event activity observed by tower south of airport at two–one–zero–zero Zulu."

d. Report MANPADS threat/attack/post–event activity via the ATIS and/or controller–to–pilot transmissions until notified otherwise by the Domestic Events Network (DEN) Air Traffic Security Coordinator (ATSC).

REFERENCE–
FAA Order JO 7110.65, Para 2–9–3, Content.
FAA Order JO 7210.3, Para 2–1–10, Handling MANPADS Incidents.
FAA Order JO 7610.4, Para 16-1-3, Responsibilities.

10–2–14. UNAUTHORIZED LASER ILLUMINATION OF AIRCRAFT

a. When a laser event is reported to an air traffic facility, broadcast on all appropriate frequencies a general caution warning every five minutes for 20 minutes following the last report.

PHRASEOLOGY–
UNAUTHORIZED LASER ILLUMINATION EVENT, (location), (altitude).

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

NOTE–
All personnel can expect aircrews to regard lasers as an inflight emergency and may take evasive action to avoid laser illumination. Additionally, other aircraft may request clearance to avoid the area.

REFERENCE–
FAA Order JO 7110.65, Para 2–9–3, Content.
FAA Order JO 7210.3, Para 2–1–29, Reporting Unauthorized Laser Illumination of Aircraft.

10–2–15. EMERGENCY AIRPORT RECOMMENDATION

a. Consider the following factors when recommending an emergency airport:

1. Remaining fuel in relation to airport distances.

2. Weather conditions.

NOTE–
Depending on the nature of the emergency, certain weather phenomena may deserve weighted consideration when recommending an airport; e.g., a pilot may elect to fly farther to land at an airport with VFR instead of IFR conditions.

3. Airport conditions.

4. NAVAID status.

5. Aircraft type.

6. Pilot's qualifications.

7. Vectoring or homing capability to the emergency airport.

NOTE–
In the event of an Emergency Autoland system activation, the system will select a suitable airport and advise ATC. The Emergency Autoland system does not consider closed runways, equipment on the runway, construction, or other possible airport hazards when selecting a suitable airport.

b. Consideration to the provisions of subparagraph a and paragraph 10–2–16, Guidance to Emergency Airport, must be used in conjunction with the information derived from any automated emergency airport information source.

10–2–16. GUIDANCE TO EMERGENCY AIRPORT

a. When necessary, use any of the following for guidance to the airport:

1. Radar.

2. Following another aircraft.

3. NAVAIDs.

4. Pilotage by landmarks.

5. Compass headings.

b. Consideration to the provisions of paragraph 10–2–15, Emergency Airport Recommendation, must be used in conjunction with the information derived from any automated emergency airport information source.

10–2–17. EMERGENCY OBSTRUCTION VIDEO MAP (EOVM)

a. The EOVM is intended to facilitate advisory service to an aircraft in an emergency situation wherein an appropriate terrain/obstacle clearance minimum altitude cannot be maintained. It must only be used and the service provided under the following conditions:

1. The pilot has declared an emergency, or

2. The controller has determined that an emergency condition exists or is imminent because of the pilot's inability to maintain an appropriate terrain/obstacle clearance minimum altitude.

NOTE–
Appropriate terrain/obstacle clearance minimum altitudes may be defined as Minimum IFR Altitude (MIA), Minimum En Route Altitude (MEA), Minimum Obstruction Clearance Altitude (MOCA), or Minimum Vectoring Altitude (MVA).

b. When providing emergency vectoring service, the controller must advise the pilot that any headings issued are emergency advisories intended only to direct the aircraft toward and over an area of lower terrain/obstacle elevation.

NOTE–
Altitudes and obstructions depicted on the EOVM are the actual altitudes and locations of the obstacle/terrain and contain no lateral or vertical buffers for obstruction clearance.

REFERENCE–
FAA Order JO 7210.3, Para 3–8–4, Emergency Obstruction Video Map (EOVM).

10–2–18. VOLCANIC ASH

a. If a volcanic ash cloud is known or forecast to be present:

1. Relay all information available to pilots to ensure that they are aware of the ash cloud's position and altitude(s).

2. Suggest appropriate reroutes to avoid the area of known or forecast ash clouds.

NOTE–
Volcanic ash clouds are not normally detected by airborne or air traffic radar systems.

b. If advised by an aircraft that it has entered a volcanic ash cloud and indicates that a distress situation exists:

1. Consider the aircraft to be in an emergency situation.

2. Do not initiate any climb clearances to turbine–powered aircraft until the aircraft has exited the ash cloud.

3. Do not attempt to provide escape vectors without pilot concurrence.

NOTE–
1. *The recommended escape maneuver is to reverse course and begin a descent (if terrain permits). However, it is the pilot's responsibility to determine the safest escape route from the ash cloud.*

2. *Controllers should be aware of the possibility of complete loss of power to any turbine–powered aircraft that encounters an ash cloud.*

REFERENCE–
FAA Order JO 7110.65, Para 10–2–4, Altitude Change for Improved Reception.
AIM, Para 7–5–9, Flight Operations in Volcanic Ash.

10–2–19. REPORTING DEATH, ILLNESS, OR OTHER PUBLIC HEALTH RISK ON BOARD AIRCRAFT

a. If an air traffic controller receives a report of the death of person, an illness, and/or other public health risk obtain the following information and notify the operations manager in charge (OMIC)/operations supervisor (OS)/controller-in-charge (CIC) as soon as possible.

1. Call sign.

2. Number of suspected cases of illness on board.

3. Nature of the illnesses or other public health risk, if known.

4. Number of persons on board.

5. Number of deaths, if applicable.

6. Pilot's intent (for example, continue to destination or divert).

7. Any request for assistance (for example, needing emergency medical services to meet the aircraft at arrival).

b. The OMIC/OS/CIC must relay the information to the DEN as soon as possible.

NOTE–
1. *If the ATC facility is not actively monitoring the DEN or does not have a dedicated line to the DEN, they must call into the DEN directly via 844–432–2962 (toll free).*

2. *Except in extraordinary circumstances, such as a situation requiring ATC intervention, follow-on coordination regarding the incident will not involve ATC frequencies.*

3. *The initial report to a U.S. ATC facility may be passed from a prior ATC facility along the route of flight.*

REFERENCE–
FAA Order JO 7210.3, Para 2-1-33, Reporting Death, Illness, or Other Public Health Risk On Board Aircraft.

Section 5. Miscellaneous Operations

10–5–1. EXPLOSIVE CARGO

TERMINAL

When you receive information that an emergency landing will be made with explosive cargo aboard, inform the pilot of the safest or least congested airport areas. Relay the explosive cargo information to:

a. The emergency equipment crew.

b. The airport management.

c. The appropriate military agencies, when requested by the pilot.

10–5–2. DEBRIS–GENERATING SPACE LAUNCH OR REENTRY VEHICLE MISHAPS

A debris–generating space launch or reentry vehicle mishap is an emergency situation in the NAS.

a. In the event of a debris–generating space launch or reentry vehicle mishap, issue an alert broadcast to all affected aircraft informing them of the mishap, and, if known, the approximate location of the debris fall area. If a debris response area (DRA) has been activated, issue the approximate location of the response area instead.

EXAMPLE–
"Attention all aircraft, due to a space vehicle mishap, possible debris falling in the NAS from approximately Brownsville, Texas, extending east for approximately five hundred miles. Stand by for individual instructions."

"Attention all aircraft, due to a space vehicle mishap, a debris response area has been activated beginning at approximately Cape Canaveral, extending northeast for approximately three hundred miles. Stand by for individual instructions."

1. When workload permits, reissue the alert broadcast approximately every 15 minutes.

2. When advised that falling debris is no longer a factor, or the DRA has been deactivated, issue a broadcast to advise all aircraft of this information.

EXAMPLE–
"Attention all aircraft, falling debris no longer a factor."

"Attention all aircraft, the debris response area is no longer active."

b. In the event of a debris response area activation:

1. Issue instructions and/or clearances to prevent aircraft from entering the debris response area, unless a higher priority duty already exists.

REFERENCE–
FAA Order JO 7110.65, Para 2–1–2a, Duty Priority.

2. For airborne aircraft already within an activated DRA:

(a) Assist aircraft to exit the DRA expeditiously;

(b) Do not withhold landing or approach clearances.

3. For airports that underlie an active DRA:

(a) Do not issue departure releases or takeoff clearances;

(b) To the extent possible do not clear aircraft onto the movement area.

PILOT/CONTROLLER GLOSSARY

PURPOSE

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

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

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

EXPLANATION OF CHANGES

d. Terms Added:
ADAPTED ROUTES
AIRSPACE RESERVATION
DEBRIS RESPONSE AREA (DRA)
EMBEDDED ROUTE TEXT
HOT SPOT
MOVING AIRSPACE RESERVATION
MOVING ALTITUDE RESERVATION
STATIONARY AIRSPACE RESERVATION

e. Terms Deleted:
PREFERENTIAL ROUTES

f. Terms Modified:
ALTITUDE RESERVATION (ALTRV)
CLEARANCE VOID IF NOT OFF BY (TIME)
MINIMUM SAFE ALTITUDE (MSA)
OCEANIC ERROR REPORT
PRECISION APPROACH RADAR
PREFERRED IFR ROUTES
STATIONARY ALTITUDE RESERVATION (STATIONARY ALTRV)

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

A

AAR–
(See AIRPORT ARRIVAL RATE.)
(See ADAPTED ROUTES.)

ABBREVIATED IFR FLIGHT PLANS– An authorization by ATC requiring pilots to submit only that information needed for the purpose of ATC. It includes only a small portion of the usual IFR flight plan information. In certain instances, this may be only aircraft identification, location, and pilot request. Other information may be requested if needed by ATC for separation/control purposes. It is frequently used by aircraft which are airborne and desire an instrument approach or by aircraft which are on the ground and desire a climb to VFR-on-top.
(See VFR-ON-TOP.)
(Refer to AIM.)

ABEAM– An aircraft is "abeam" a fix, point, or object when that fix, point, or object is approximately 90 degrees to the right or left of the aircraft track. Abeam indicates a general position rather than a precise point.

ABORT– To terminate a preplanned aircraft maneuver; e.g., an aborted takeoff.

ABRR–
(See AIRBORNE REROUTE)

ACC [ICAO]–
(See ICAO term AREA CONTROL CENTER.)

ACCELERATE-STOP DISTANCE AVAILABLE– The runway plus stopway length declared available and suitable for the acceleration and deceleration of an airplane aborting a takeoff.

ACCELERATE-STOP DISTANCE AVAILABLE [ICAO]– The length of the take-off run available plus the length of the stopway if provided.

ACDO–
(See AIR CARRIER DISTRICT OFFICE.)

ACKNOWLEDGE– Let me know that you have received and understood this message.

ACL–
(See AIRCRAFT LIST.)

ACLS–
(See AUTOMATIC CARRIER LANDING SYSTEM.)

ACROBATIC FLIGHT– An intentional maneuver involving an abrupt change in an aircraft's attitude, an abnormal attitude, or abnormal acceleration not necessary for normal flight.
(See ICAO term ACROBATIC FLIGHT.)
(Refer to 14 CFR Part 91.)

ACROBATIC FLIGHT [ICAO]– Maneuvers intentionally performed by an aircraft involving an abrupt change in its attitude, an abnormal attitude, or an abnormal variation in speed.

ACTIVE RUNWAY–
(See RUNWAY IN USE/ACTIVE RUNWAY/DUTY RUNWAY.)

ACTUAL NAVIGATION PERFORMANCE (ANP)–
(See REQUIRED NAVIGATION PERFORMANCE.)

ADAPTED ROUTES– Departure and/or arrival routes that are adapted in ARTCC ERAM computers to accomplish inter/intrafacility controller coordination and to ensure that flight data is posted at the proper control positions. Adapted routes are automatically applied to flight plans where appropriate. When the workload or traffic situation permits, controllers may provide radar vectors or assign requested routes to minimize circuitous routing. Adapted routes are usually confined to one ARTCC's area and are referred to by the following names or abbreviations:

a. Adapted Arrival Route (AAR). A specific arrival route from an appropriate en route point to an airport or terminal area. It may be included in a Standard Terminal Arrival (STAR) or a Preferred IFR Route.

b. Adapted Departure Route (ADR). A specific departure route from an airport or terminal area to an en route point where there is no further need for flow control. It may be included in an Instrument Departure Procedure (DP) or a Preferred IFR Route.

c. Adapted Departure and Arrival Route (ADAR). A route between two terminals which are within or

immediately adjacent to one ARTCC's area. ADARs are similar to Preferred IFR Routes and may share components, but they are not synonymous.
(See PREFFERED IFR ROUTES.)

ADAR–
(See ADAPTED ROUTES.)

ADDITIONAL SERVICES– Advisory information provided by ATC which includes but is not limited to the following:

a. Traffic advisories.

b. Vectors, when requested by the pilot, to assist aircraft receiving traffic advisories to avoid observed traffic.

c. Altitude deviation information of 300 feet or more from an assigned altitude as observed on a verified (reading correctly) automatic altitude readout (Mode C).

d. Advisories that traffic is no longer a factor.

e. Weather and chaff information.

f. Weather assistance.

g. Bird activity information.

h. Holding pattern surveillance. Additional services are provided to the extent possible contingent only upon the controller's capability to fit them into the performance of higher priority duties and on the basis of limitations of the radar, volume of traffic, frequency congestion, and controller workload. The controller has complete discretion for determining if he/she is able to provide or continue to provide a service in a particular case. The controller's reason not to provide or continue to provide a service in a particular case is not subject to question by the pilot and need not be made known to him/her.
(See TRAFFIC ADVISORIES.)
(Refer to AIM.)

ADF–
(See AUTOMATIC DIRECTION FINDER.)

ADIZ–
(See AIR DEFENSE IDENTIFICATION ZONE.)

ADLY–
(See ARRIVAL DELAY.)

ADMINISTRATOR– The Federal Aviation Administrator or any person to whom he/she has delegated his/her authority in the matter concerned.

ADR–
(See ADAPTED ROUTES.)
(See AIRPORT DEPARTURE RATE.)

ADS [ICAO]–
(See ICAO term AUTOMATIC DEPENDENT SURVEILLANCE.)

ADS–B–
(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST.)

ADS–C–
(See AUTOMATIC DEPENDENT SURVEILLANCE–CONTRACT.)

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 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 U.S.)

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 aeronautical data in support of the activities of government, industry, and the aviation community. The information is published in the National Flight Data Digest.

(See NATIONAL FLIGHT DATA DIGEST.)

AFFIRMATIVE– Yes.

AFIS–

(See AUTOMATIC FLIGHT INFORMATION SERVICE – ALASKA FSSs ONLY.)

AFP–

(See AIRSPACE FLOW PROGRAM.)

AHA–

(See AIRCRAFT HAZARD AREA.)

AIM–

(See AERONAUTICAL INFORMATION MANUAL.)

AIP [ICAO]–

(See ICAO term AERONAUTICAL INFORMATION PUBLICATION.)

AIR CARRIER DISTRICT OFFICE– An FAA field office serving an assigned geographical area, staffed with Flight Standards personnel serving the aviation industry and the general public on matters related to the certification and operation of scheduled air carriers and other large aircraft operations.

AIR DEFENSE EMERGENCY– A military emergency condition declared by a designated authority. This condition exists when an attack upon the continental U.S., Alaska, Canada, or U.S. installations in Greenland by hostile aircraft or missiles is considered probable, is imminent, or is taking place.

(Refer to AIM.)

AIR DEFENSE IDENTIFICATION ZONE (ADIZ)– An area of airspace over land or water in which the ready identification, location, and control of all aircraft (except for Department of Defense and law enforcement aircraft) is required in the interest of national security.

Note: ADIZ locations and operating and flight plan requirements for civil aircraft operations are specified in 14 CFR Part 99.

(Refer to AIM.)

AIR NAVIGATION FACILITY– Any facility used in, available for use in, or designed for use in, aid of air navigation, including landing areas, lights, any apparatus or equipment for disseminating weather information, for signaling, for radio-directional finding, or for radio or other electrical communication, and any other structure or mechanism having a similar purpose for guiding or controlling flight in the air or the landing and takeoff of aircraft.

(See NAVIGATIONAL AID.)

AIR ROUTE SURVEILLANCE RADAR– Air route traffic control center (ARTCC) radar used primarily to detect and display an aircraft's position while en route between terminal areas. The ARSR enables controllers to provide radar air traffic control service when aircraft are within the ARSR coverage. In some instances, ARSR may enable an ARTCC to provide terminal radar services similar to but usually more limited than those provided by a radar approach control.

AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC)– A facility established to provide air traffic control service to aircraft operating on IFR flight plans within controlled airspace and principally during the en route phase of flight. When equipment capabilities and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft.

(See EN ROUTE AIR TRAFFIC CONTROL SERVICES.)

(Refer to AIM.)

AIR TAXI– Used to describe a helicopter/VTOL aircraft movement conducted above the surface but normally not above 100 feet AGL. The aircraft may proceed either via hover taxi or flight at speeds more than 20 knots. The pilot is solely responsible for selecting a safe airspeed/altitude for the operation being conducted.

(See HOVER TAXI.)

(Refer to AIM.)

AIR TRAFFIC– Aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.

(See ICAO term AIR TRAFFIC.)

AIR TRAFFIC [ICAO]– All aircraft in flight or operating on the maneuvering area of an aerodrome.

AIR TRAFFIC CLEARANCE– An authorization by air traffic control for the purpose of preventing collision between known aircraft, for an aircraft to proceed under specified traffic conditions within controlled airspace. The pilot-in-command of an aircraft may not deviate from the provisions of a visual flight rules (VFR) or instrument flight rules (IFR) air traffic clearance except in an emergency or unless an amended clearance has been obtained. Additionally, the pilot may request a different clearance from that which has been issued by air traffic control (ATC) if information available to the pilot makes another course of action more practicable or if aircraft equipment limitations or company procedures forbid compliance with the clearance issued. Pilots may also request clarification or amendment, as appropriate, any time a clearance is not fully understood, or considered unacceptable because of safety of flight. Controllers should, in such instances and to the extent of operational practicality and safety, honor the pilot's request. 14 CFR Part 91.3(a) states: "The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft." THE PILOT IS RESPONSIBLE TO REQUEST AN AMENDED CLEARANCE if ATC issues a clearance that would cause a pilot to deviate from a rule or regulation, or in the pilot's opinion, would place the aircraft in jeopardy.

(See ATC INSTRUCTIONS.)

(See ICAO term AIR TRAFFIC CONTROL CLEARANCE.)

AIR TRAFFIC CONTROL– A service operated by appropriate authority to promote the safe, orderly and expeditious flow of air traffic.

(See ICAO term AIR TRAFFIC CONTROL SERVICE.)

AIR TRAFFIC CONTROL CLEARANCE [ICAO]– Authorization for an aircraft to proceed under conditions specified by an air traffic control unit.

Note 1: For convenience, the term air traffic control clearance is frequently abbreviated to clearance when used in appropriate contexts.

Note 2: The abbreviated term clearance may be prefixed by the words taxi, takeoff, departure, en route, approach or landing to indicate the particular portion of flight to which the air traffic control clearance relates.

AIR TRAFFIC CONTROL SERVICE–

(See AIR TRAFFIC CONTROL.)

AIR TRAFFIC CONTROL SERVICE [ICAO]– A service provided for the purpose of:

a. Preventing collisions:

1. Between aircraft; and

2. On the maneuvering area between aircraft and obstructions.

b. Expediting and maintaining an orderly flow of air traffic.

AIR TRAFFIC CONTROL SPECIALIST– A person authorized to provide air traffic control service.

(See AIR TRAFFIC CONTROL.)

(See FLIGHT SERVICE STATION.)

(See ICAO term CONTROLLER.)

AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER (ATCSCC)– An Air Traffic Tactical Operations facility responsible for monitoring and managing the flow of air traffic throughout the NAS, producing a safe, orderly, and expeditious flow of traffic while minimizing delays. The following functions are located at the ATCSCC:

a. Central Altitude Reservation Function (CARF). Responsible for coordinating, planning, and approving special user requirements under the Altitude Reservation (ALTRV) concept.

(See ALTITUDE RESERVATION.)

b. Airport Reservation Office (ARO). Monitors the operation and allocation of reservations for unscheduled operations at airports designated by the Administrator as High Density Airports. These airports are generally known as slot controlled airports. The ARO allocates reservations on a first

come, first served basis determined by the time the request is received at the ARO.

(Refer to 14 CFR Part 93.)

(See CHART SUPPLEMENT U.S.)

c. U.S. Notice to 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 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.)

AIRCRAFT WAKE TURBULENCE CATEGORIES– For the purpose of Wake Turbulence Recategorization (RECAT) Separation Minima, ATC groups aircraft into categories ranging from Category A through Category I, dependent upon the version of RECAT that is applied. Specific category assignments vary and are listed in the RECAT Orders.

AIRMEN'S METEOROLOGICAL INFORMATION (AIRMET)– In-flight weather advisories issued only to amend the Aviation Surface Forecast, Aviation Cloud Forecast, or area forecast concerning weather phenomena which are of operational interest to all aircraft and potentially hazardous to aircraft having limited capability because of lack of equipment, instrumentation, or pilot qualifications. AIRMETs concern weather of less severity than that covered by SIGMETs or Convective SIGMETs. AIRMETs cover moderate icing, moderate turbulence, sustained winds of 30 knots or more at the surface, widespread areas of ceilings less than 1,000 feet and/or visibility less than 3 miles, and extensive mountain obscurement.

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

AIRPORT– An area on land or water that is used or intended to be used for the landing and takeoff of aircraft and includes its buildings and facilities, if any.

AIRPORT ADVISORY AREA– The area within ten miles of an airport without a control tower or where the tower is not in operation, and on which a Flight Service Station is located.

(See LOCAL AIRPORT ADVISORY.)
(Refer to AIM.)

AIRPORT ARRIVAL RATE (AAR)– A dynamic input parameter specifying the number of arriving aircraft which an airport or airspace can accept from the ARTCC per hour. The AAR is used to calculate the desired interval between successive arrival aircraft.

AIRPORT DEPARTURE RATE (ADR)– A dynamic parameter specifying the number of aircraft which can depart an airport and the airspace can accept per hour.

AIRPORT ELEVATION– The highest point of an airport's usable runways measured in feet from mean sea level.

(See TOUCHDOWN ZONE ELEVATION.)
(See ICAO term AERODROME ELEVATION.)

AIRPORT LIGHTING– Various lighting aids that may be installed on an airport. Types of airport lighting include:

a. Approach Light System (ALS)– An airport lighting facility which provides visual guidance to landing aircraft by radiating light beams in a directional pattern by which the pilot aligns the aircraft with the extended centerline of the runway on his/her final approach for landing. Condenser-Discharge Sequential Flashing Lights/Sequenced Flashing Lights may be installed in conjunction with the ALS at some airports. Types of Approach Light Systems are:

1. ALSF-1– Approach Light System with Sequenced Flashing Lights in ILS Cat-I configuration.

2. ALSF-2– Approach Light System with Sequenced Flashing Lights in ILS Cat-II configuration. The ALSF-2 may operate as an SSALR when weather conditions permit.

3. SSALF– Simplified Short Approach Light System with Sequenced Flashing Lights.

4. SSALR– Simplified Short Approach Light System with Runway Alignment Indicator Lights.

5. MALSF– Medium Intensity Approach Light System with Sequenced Flashing Lights.

6. MALSR– Medium Intensity Approach Light System with Runway Alignment Indicator Lights.

7. RLLS– Runway Lead-in Light System Consists of one or more series of flashing lights installed at or near ground level that provides positive visual guidance along an approach path, either curving or straight, where special problems exist with hazardous terrain, obstructions, or noise abatement procedures.

8. RAIL– Runway Alignment Indicator Lights– Sequenced Flashing Lights which are installed only in combination with other light systems.

9. ODALS– Omnidirectional Approach Lighting System consists of seven omnidirectional flashing lights located in the approach area of a nonprecision runway. Five lights are located on the runway centerline extended with the first light located 300 feet from the threshold and extending at equal intervals up to 1,500 feet from the threshold. The other two lights are located, one on each side of the runway threshold, at a lateral distance of 40 feet from the runway edge, or 75 feet from the runway edge when installed on a runway equipped with a VASI.

(Refer to FAA Order JO 6850.2, VISUAL GUIDANCE LIGHTING SYSTEMS.)

b. Runway Lights/Runway Edge Lights– Lights having a prescribed angle of emission used to define the lateral limits of a runway. Runway lights are uniformly spaced at intervals of approximately 200 feet, and the intensity may be controlled or preset.

c. Touchdown Zone Lighting– Two rows of transverse light bars located symmetrically about the runway centerline normally at 100 foot intervals. The basic system extends 3,000 feet along the runway.

d. Runway Centerline Lighting– Flush centerline lights spaced at 50-foot intervals beginning 75 feet from the landing threshold and extending to within 75 feet of the opposite end of the runway.

e. Threshold Lights– Fixed green lights arranged symmetrically left and right of the runway centerline, identifying the runway threshold.

f. Runway End Identifier Lights (REIL)– Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

g. Visual Approach Slope Indicator (VASI)– An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that he/she is "on path" if he/she sees red/white, "above path" if white/white, and "below path" if red/red. Some airports serving large aircraft have three-bar VASIs which provide two visual glide paths to the same runway.

h. Precision Approach Path Indicator (PAPI)– An airport lighting facility, similar to VASI, providing vertical approach slope guidance to aircraft during approach to landing. PAPIs consist of a single row of either two or four lights, normally installed on the left

side of the runway, and have an effective visual range of about 5 miles during the day and up to 20 miles at night. PAPIs radiate a directional pattern of high intensity red and white focused light beams which indicate that the pilot is "on path" if the pilot sees an equal number of white lights and red lights, with white to the left of the red; "above path" if the pilot sees more white than red lights; and "below path" if the pilot sees more red than white lights.

i. Boundary Lights– Lights defining the perimeter of an airport or landing area.

(Refer to AIM.)

AIRPORT MARKING AIDS– Markings used on runway and taxiway surfaces to identify a specific runway, a runway threshold, a centerline, a hold line, etc. A runway should be marked in accordance with its present usage such as:

a. Visual.

b. Nonprecision instrument.

c. Precision instrument.

(Refer to AIM.)

AIRPORT REFERENCE POINT (ARP)– The approximate geometric center of all usable runway surfaces.

AIRPORT RESERVATION OFFICE– Office responsible for monitoring the operation of slot controlled airports. It receives and processes requests for unscheduled operations at slot controlled airports.

AIRPORT ROTATING BEACON– A visual NAVAID operated at many airports. At civil airports, alternating white and green flashes indicate the location of the airport. At military airports, the beacons flash alternately white and green, but are differentiated from civil beacons by dualpeaked (two quick) white flashes between the green flashes.

(See INSTRUMENT FLIGHT RULES.)

(See SPECIAL VFR OPERATIONS.)

(See ICAO term AERODROME BEACON.)

(Refer to AIM.)

AIRPORT SURFACE DETECTION EQUIPMENT (ASDE)– Surveillance equipment specifically designed to detect aircraft, vehicular traffic, and other objects, on the surface of an airport, and to present the image on a tower display. Used to augment visual observation by tower personnel of aircraft and/or vehicular movements on runways and taxiways. There are three ASDE systems deployed in the NAS:

a. ASDE–3– a Surface Movement Radar.

b. ASDE–X– a system that uses an X–band Surface Movement Radar, multilateration, and ADS–B.

c. Airport Surface Surveillance Capability (ASSC)– A system that uses Surface Movement Radar, multilateration, and ADS–B.

AIRPORT SURVEILLANCE RADAR– Approach control radar used to detect and display an aircraft's position in the terminal area. ASR provides range and azimuth information but does not provide elevation data. Coverage of the ASR can extend up to 60 miles.

AIRPORT TAXI CHARTS–

(See AERONAUTICAL CHART.)

AIRPORT TRAFFIC CONTROL SERVICE– A service provided by a control tower for aircraft operating on the movement area and in the vicinity of an airport.

(See MOVEMENT AREA.)

(See TOWER.)

(See ICAO term AERODROME CONTROL SERVICE.)

AIRPORT TRAFFIC CONTROL TOWER–

(See TOWER.)

AIRSPACE CONFLICT– Predicted conflict of an aircraft and active Special Activity Airspace (SAA).

AIRSPACE FLOW PROGRAM (AFP)– AFP is a Traffic Management (TM) process administered by the Air Traffic Control System Command Center (ATCSCC) where aircraft are assigned an Expect Departure Clearance Time (EDCT) in order to manage capacity and demand for a specific area of the National Airspace System (NAS). The purpose of the program is to mitigate the effects of en route constraints. It is a flexible program and may be implemented in various forms depending upon the needs of the air traffic system.

AIRSPACE HIERARCHY– Within the airspace classes, there is a hierarchy and, in the event of an overlap of airspace: Class A preempts Class B, Class B preempts Class C, Class C preempts Class D, Class D preempts Class E, and Class E preempts Class G.

AIRSPEED– The speed of an aircraft relative to its surrounding air mass. The unqualified term "airspeed" means one of the following:

a. Indicated Airspeed– The speed shown on the aircraft airspeed indicator. This is the speed used in

pilot/controller communications under the general term “airspeed.”

(Refer to 14 CFR Part 1.)

b. True Airspeed– The airspeed of an aircraft relative to undisturbed air. Used primarily in flight planning and en route portion of flight. When used in pilot/controller communications, it is referred to as “true airspeed” and not shortened to “airspeed.”

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.

(See AUTOMATED RADAR TERMINAL SYSTEMS.)

ALTERNATE AERODROME [ICAO]– An aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome of intended landing.

Note: The aerodrome from which a flight departs may also be an en-route or a destination alternate aerodrome for the flight.

ALTERNATE AIRPORT– An airport at which an aircraft may land if a landing at the intended airport becomes inadvisable.

(See ICAO term ALTERNATE AERODROME.)

ALTIMETER SETTING– The barometric pressure reading used to adjust a pressure altimeter for variations in existing atmospheric pressure or to the standard altimeter setting (29.92).

(Refer to 14 CFR Part 91.)
(Refer to AIM.)

ALTITUDE– The height of a level, point, or object measured in feet Above Ground Level (AGL) or from Mean Sea Level (MSL).

(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.)

(See AUTOMATED RADAR TERMINAL SYSTEMS.)

(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.)

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 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 U.S. and approach charts.

AUTOMATIC ALTITUDE REPORT–
(See ALTITUDE READOUT.)

AUTOMATIC ALTITUDE REPORTING– That function of a transponder which responds to Mode C interrogations by transmitting the aircraft's altitude in 100-foot increments.

AUTOMATIC CARRIER LANDING SYSTEM– U.S. Navy final approach equipment consisting of precision tracking radar coupled to a computer data link to provide continuous information to the aircraft, monitoring capability to the pilot, and a backup approach system.

AUTOMATIC DEPENDENT SURVEILLANCE (ADS) [ICAO]– A surveillance technique in which aircraft automatically provide, via a data link, data derived from on–board navigation and position fixing systems, including aircraft identification, four dimensional position and additional data as appropriate.

AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST (ADS-B)– A surveillance system in which an aircraft or vehicle to be detected is fitted with cooperative equipment in the form of a data link transmitter. The aircraft or vehicle periodically broadcasts its 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 niner niner six. I-L-S Runway Two Five Left approach in use, Runway Two Five Right closed, advise you have Alfa."

(See ICAO term AUTOMATIC TERMINAL INFORMATION SERVICE.)

(Refer to AIM.)

AUTOMATIC TERMINAL INFORMATION SERVICE [ICAO]– The provision of current, routine information to arriving and departing aircraft by means of continuous and repetitive broadcasts throughout the day or a specified portion of the day.

AUTOROTATION– A rotorcraft flight condition in which the lifting rotor is driven entirely by action of the air when the rotorcraft is in motion.

a. Autorotative Landing/Touchdown Autorotation. Used by a pilot to indicate that the landing will be made without applying power to the rotor.

b. Low Level Autorotation. Commences at an altitude well below the traffic pattern, usually below 100 feet AGL and is used primarily for tactical military training.

c. 180 degrees Autorotation. Initiated from a downwind heading and is commenced well inside the normal traffic pattern. "Go around" may not be possible during the latter part of this maneuver.

AVAILABLE LANDING DISTANCE (ALD)– The portion of a runway available for landing and roll-out for aircraft cleared for LAHSO. This distance is measured from the landing threshold to the hold-short point.

AVIATION 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.)

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.)

D

D–ATIS–
(See DIGITAL-AUTOMATIC TERMINAL INFORMATION SERVICE.)

D–ATIS [ICAO]–
(See ICAO Term DATA LINK AUTOMATIC TERMINAL INFORMATION SERVICE.)

DA [ICAO]–
(See ICAO Term DECISION ALTITUDE/DECISION HEIGHT.)

DAIR–
(See DIRECT ALTITUDE AND IDENTITY READOUT.)

DANGER AREA [ICAO]– An airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.

Note: The term "Danger Area" is not used in reference to areas within the United States or any of its possessions or territories.

DAS–
(See DELAY ASSIGNMENT.)

DATA BLOCK–
(See ALPHANUMERIC DISPLAY.)

DATA LINK AUTOMATIC TERMINAL INFORMATION SERVICE (D–ATIS) [ICAO]– The provision of ATIS via data link.

DCT–
(See DELAY COUNTDOWN TIMER.)

DEAD RECKONING– Dead reckoning, as applied to flying, is the navigation of an airplane solely by means of computations based on airspeed, course, heading, wind direction, and speed, groundspeed, and elapsed time.

DEBRIS RESPONSE AREA (DRA)– Used by ATC. Areas of airspace that may be activated in response to unplanned falling debris in the NAS.

DECISION ALTITUDE/DECISION HEIGHT [ICAO Annex 6]- A specified altitude or height (A/H) in the precision approach at which a missed approach must be initiated if the required visual reference to continue the approach has not been established.
1. Decision altitude (DA) is referenced to mean sea level and decision height (DH) is referenced to the threshold elevation.
2. Category II and III minima are expressed as a DH and not a DA. Minima is assessed by reference to a radio altimeter and not a barometric altimeter, which makes the minima a DH.
3. The required visual reference means that section of the visual aids or of the approach area which should have been in view for sufficient time for the pilot to have made an assessment of the aircraft position and rate of change of position, in relation to the desired flight path.

DECISION ALTITUDE (DA)– A specified altitude (mean sea level (MSL)) on an instrument approach procedure (ILS, GLS, vertically guided RNAV) at which the pilot must decide whether to continue the approach or initiate an immediate missed approach if the pilot does not see the required visual references.

DECISION HEIGHT (DH)– With respect to the operation of aircraft, means the height at which a decision must be made during an ILS or PAR instrument approach to either continue the approach or to execute a missed approach.
(See ICAO term DECISION ALTITUDE/DECISION HEIGHT.)

DECODER– The device used to decipher signals received from ATCRBS transponders to effect their display as select codes.
(See CODES.)
(See RADAR.)

DEFENSE AREA– Any airspace of the contiguous United States that is not an ADIZ in which the control of aircraft is required for reasons of national security.

DEFENSE VISUAL FLIGHT RULES– Rules applicable to flights within an ADIZ conducted under the visual flight rules in 14 CFR Part 91.
(See AIR DEFENSE IDENTIFICATION ZONE.)
(Refer to 14 CFR Part 91.)
(Refer to 14 CFR Part 99.)

DELAY ASSIGNMENT (DAS)– Delays are distributed to aircraft based on the traffic management program parameters. The delay assignment is calculated in 15–minute increments and appears as a table in Traffic Flow Management System (TFMS).

DELAY COUNTDOWN TIMER (DCT)– The display of the delay that must be absorbed by a flight prior to crossing a Meter Reference Element (MRE) to meet the TBFM Scheduled Time of Arrival (STA). It is calculated by taking the difference between the frozen STA and the Estimated Time of Arrival (ETA).

DELAY INDEFINITE (REASON IF KNOWN) EXPECT FURTHER CLEARANCE (TIME)– Used by ATC to inform a pilot when an accurate estimate of the delay time and the reason for the delay cannot immediately be determined; e.g., a disabled aircraft on the runway, terminal or center area saturation, weather below landing minimums, etc.

(See EXPECT FURTHER CLEARANCE (TIME).)

DEPARTURE CENTER– The ARTCC having jurisdiction for the airspace that generates a flight to the impacted airport.

DEPARTURE CONTROL– A function of an approach control facility providing air traffic control service for departing IFR and, under certain conditions, VFR aircraft.

(See APPROACH CONTROL FACILITY.)

(Refer to AIM.)

DEPARTURE SEQUENCING PROGRAM– A program designed to assist in achieving a specified interval over a common point for departures.

DEPARTURE TIME– The time an aircraft becomes airborne.

DEPARTURE VIEWER– A capability within the Traffic Flow Management System (TFMS) that provides combined displays for monitoring departure by fixes and departure airports. Traffic management personnel can customize the displays by selecting the departure airports and fixes of interest. The information displayed is the demand for the resource (fix or departure airport) in time bins with the flight list and a flight history for one flight at a time. From the display, flights can be selected for route amendment, one or more at a time, and the Route Amendment Dialogue (RAD) screen automatically opens for easy route selection and execution. Reroute options are based on Coded Departure Route (CDR) database and Trajectory Options Set (TOS) (when available).

DESCEND VIA– An abbreviated ATC clearance that requires compliance with a published procedure lateral path and associated speed restrictions and provides a pilot-discretion descent to comply with published altitude restrictions.

DESCENT SPEED ADJUSTMENTS– Speed deceleration calculations made to determine an accurate VTA. These calculations start at the transition point and use arrival speed segments to the vertex.

DESIGNATED COMMON TRAFFIC ADVISORY FREQUENCY (CTAF) AREA– In Alaska, in addition to being designated for the purpose of carrying out airport advisory practices while operating to or from an airport without an operating airport traffic control tower, a CTAF may also be designated for the purpose of carrying out advisory practices for operations in and through areas with a high volume of VFR traffic.

DESIRED COURSE–

a. True– A predetermined desired course direction to be followed (measured in degrees from true north).

b. Magnetic– A predetermined desired course direction to be followed (measured in degrees from local magnetic north).

DESIRED TRACK– The planned or intended track between two waypoints. It is measured in degrees from either magnetic or true north. The instantaneous angle may change from point to point along the great circle track between waypoints.

DETRESFA (DISTRESS PHASE) [ICAO]– The code word used to designate an emergency phase wherein there is reasonable certainty that an aircraft and its occupants are threatened by grave and imminent danger or require immediate assistance.

DEVIATIONS–

a. A departure from a current clearance, such as an off course maneuver to avoid weather or turbulence.

b. Where specifically authorized in the CFRs and requested by the pilot, ATC may permit pilots to deviate from certain regulations.

DH–

(See DECISION HEIGHT.)

DH [ICAO]–

(See ICAO Term DECISION ALTITUDE/ DECISION HEIGHT.)

DIGITAL-AUTOMATIC TERMINAL INFORMATION SERVICE (D-ATIS)– The service provides text messages to aircraft, airlines, and other users outside the standard reception range of conventional

ATIS via landline and data link communications to the cockpit. Also, the service provides a computer–synthesized voice message that can be transmitted to all aircraft within range of existing transmitters. The Terminal Data Link System (TDLS) D-ATIS application uses weather inputs from local automated weather sources or manually entered meteorological data together with preprogrammed menus to provide standard information to users. Airports with D-ATIS capability are listed in the Chart Supplement U.S.

DIGITAL TARGET– A computer–generated symbol representing an aircraft's position, based on a primary return or radar beacon reply, shown on a digital display.

DIGITAL TERMINAL AUTOMATION SYSTEM (DTAS)– A system where digital radar and beacon data is presented on digital displays and the operational program monitors the system performance on a real–time basis.

DIGITIZED TARGET– A computer–generated indication shown on an analog radar display resulting from a primary radar return or a radar beacon reply.

DIRECT– Straight line flight between two navigational aids, fixes, points, or any combination thereof. When used by pilots in describing off-airway routes, points defining direct route segments become compulsory reporting points unless the aircraft is under radar contact.

DIRECTLY BEHIND– An aircraft is considered to be operating directly behind when it is following the actual flight path of the lead aircraft over the surface of the earth except when applying wake turbulence separation criteria.

DISCRETE BEACON CODE–

(See DISCRETE CODE.)

DISCRETE CODE– As used in the Air Traffic Control Radar Beacon System (ATCRBS), any one of the 4096 selectable Mode 3/A aircraft transponder codes except those ending in zero zero; e.g., discrete codes: 0010, 1201, 2317, 7777; nondiscrete codes: 0100, 1200, 7700. Nondiscrete codes are normally reserved for radar facilities that are not equipped with discrete decoding capability and for other purposes such as emergencies (7700), VFR aircraft (1200), etc.

(See RADAR.)

(Refer to AIM.)

DISCRETE FREQUENCY– A separate radio frequency for use in direct pilot-controller communications in air traffic control which reduces frequency congestion by controlling the number of aircraft operating on a particular frequency at one time. Discrete frequencies are normally designated for each control sector in en route/terminal ATC facilities. Discrete frequencies are listed in the Chart Supplement U.S. and the DOD FLIP IFR En Route Supplement.

(See CONTROL SECTOR.)

DISPLACED THRESHOLD– A threshold that is located at a point on the runway other than the designated beginning of the runway.

(See THRESHOLD.)

(Refer to AIM.)

DISTANCE MEASURING EQUIPMENT (DME)– Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.

(See TACAN.)

(See VORTAC.)

DISTRESS– A condition of being threatened by serious and/or imminent danger and of requiring immediate assistance.

DIVE BRAKES–

(See SPEED BRAKES.)

DIVERSE VECTOR AREA– In a radar environment, that area in which a prescribed departure route is not required as the only suitable route to avoid obstacles. The area in which random radar vectors below the MVA/MIA, established in accordance with the TERPS criteria for diverse departures, obstacles and terrain avoidance, may be issued to departing aircraft.

DIVERSION (DVRSN)– Flights that are required to land at other than their original destination for reasons beyond the control of the pilot/company, e.g. periods of significant weather.

DME–

(See DISTANCE MEASURING EQUIPMENT.)

DME FIX– A geographical position determined by reference to a navigational aid which provides distance and azimuth information. It is defined by a specific distance in nautical miles and a radial, azimuth, or course (i.e., localizer) in degrees magnetic from that aid.
(See DISTANCE MEASURING EQUIPMENT.)
(See FIX.)

DME SEPARATION– Spacing of aircraft in terms of distances (nautical miles) determined by reference to distance measuring equipment (DME).
(See DISTANCE MEASURING EQUIPMENT.)

DOD FLIP– Department of Defense Flight Information Publications used for flight planning, en route, and terminal operations. FLIP is produced by the National Geospatial–Intelligence Agency (NGA) for world-wide use. United States Government Flight Information Publications (en route charts and instrument approach procedure charts) are incorporated in DOD FLIP for use in the National Airspace System (NAS).

DOMESTIC AIRSPACE– Airspace which overlies the continental land mass of the United States plus Hawaii and U.S. possessions. Domestic airspace extends to 12 miles offshore.

DOMESTIC NOTICE– A special notice or notice containing graphics or plain language text pertaining to almost every aspect of aviation, such as military training areas, large scale sporting events, air show information, Special Traffic Management Programs (STMPs), and airport–specific information. These notices are applicable to operations within the United States and can be found on the Domestic Notices website.

DOWNBURST– A strong downdraft which induces an outburst of damaging winds on or near the ground. Damaging winds, either straight or curved, are highly divergent. The sizes of downbursts vary from 1/2 mile or less to more than 10 miles. An intense downburst often causes widespread damage. Damaging winds, lasting 5 to 30 minutes, could reach speeds as high as 120 knots.

DOWNWIND LEG–
(See TRAFFIC PATTERN.)

DP–
(See INSTRUMENT DEPARTURE PROCEDURE.)

DRA–
(See DEBRIS RESPONSE AREA.)

DRAG CHUTE– A parachute device installed on certain aircraft which is deployed on landing roll to assist in deceleration of the aircraft.

DROP ZONE– Any pre-determined area upon which parachutists or objects land after making an intentional parachute jump or drop.
(Refer to 14 CFR §105.3, Definitions)

DSP–
(See DEPARTURE SEQUENCING PROGRAM.)

DTAS–
(See DIGITAL TERMINAL AUTOMATION SYSTEM.)

DUE REGARD– A phase of flight wherein an aircraft commander of a State-operated aircraft assumes responsibility to separate his/her aircraft from all other aircraft.
(See also FAA Order JO 7110.65, Para 1–2–1, WORD MEANINGS.)

DUTY RUNWAY–
(See RUNWAY IN USE/ACTIVE RUNWAY/DUTY RUNWAY.)

DVA–
(See DIVERSE VECTOR AREA.)

DVFR–
(See DEFENSE VISUAL FLIGHT RULES.)

DVFR FLIGHT PLAN– A flight plan filed for a VFR aircraft which intends to operate in airspace within which the ready identification, location, and control of aircraft are required in the interest of national security.

DVRSN–
(See DIVERSION.)

DYNAMIC– Continuous review, evaluation, and change to meet demands.

DYNAMIC RESTRICTIONS– Those restrictions imposed by the local facility on an “as needed” basis to manage unpredictable fluctuations in traffic demands.

E

EAS–
(See EN ROUTE AUTOMATION SYSTEM.)

EDCT–
(See EXPECT DEPARTURE CLEARANCE TIME.)

EDST–
(See EN ROUTE DECISION SUPPORT TOOL)

EFC–
(See EXPECT FURTHER CLEARANCE (TIME).)

ELT–
(See EMERGENCY LOCATOR TRANSMITTER.)

EMBEDDED ROUTE TEXT– An EDST notification that an ADR/ADAR/AAR has been applied to the flight plan. Within the route field, sub–fields consisting of an adapted route or an embedded change in the route are color–coded in cyan with cyan brackets around the sub–field.
(See EN ROUTE DECISION SUPPORT TOOL.)

EMERGENCY– A distress or an urgency condition.

EMERGENCY AUTOLAND SYSTEM– This system, if activated, will determine an optimal airport, plot a course, broadcast the aircraft's intentions, fly to the airport, land, and (depending on the model) shut down the engines. Though the system will broadcast the aircraft's intentions, the controller should assume that transmissions to the aircraft will not be acknowledged.

EMERGENCY DESCENT MODE– This automated system senses conditions conducive to hypoxia (cabin depressurization). If an aircraft is equipped and the system is activated, it is designed to turn the aircraft up to 90 degrees, then descend to a lower altitude and level off, giving the pilot(s) time to recover.

EMERGENCY LOCATOR TRANSMITTER (ELT)– A radio transmitter attached to the aircraft structure which operates from its own power source on 121.5 MHz and 243.0 MHz. It aids in locating downed aircraft by radiating a downward sweeping audio tone, 2-4 times per second. It is designed to function without human action after an accident.
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

E-MSAW–
(See EN ROUTE MINIMUM SAFE ALTITUDE WARNING.)

ENHANCED FLIGHT VISION SYSTEM (EFVS)– An EFVS is an installed aircraft system which uses an electronic means to provide a display of the forward external scene topography (the natural or man–made features of a place or region especially in a way to show their relative positions and elevation) through the use of imaging sensors, including but not limited to forward–looking infrared, millimeter wave radiometry, millimeter wave radar, or low–light level image intensification. An EFVS includes the display element, sensors, computers and power supplies, indications, and controls. An operator's authorization to conduct an EFVS operation may have provisions which allow pilots to conduct IAPs when the reported weather is below minimums prescribed on the IAP to be flown.

EN ROUTE AIR TRAFFIC CONTROL SERVICES– Air traffic control service provided aircraft on IFR flight plans, generally by centers, when these aircraft are operating between departure and destination terminal areas. When equipment, capabilities, and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft.
(See AIR ROUTE TRAFFIC CONTROL CENTER.)
(Refer to AIM.)

EN ROUTE AUTOMATION SYSTEM (EAS)– The complex integrated environment consisting of situation display systems, surveillance systems and flight data processing, remote devices, decision support tools, and the related communications equipment that form the heart of the automated IFR air traffic control system. It interfaces with automated terminal systems and is used in the control of en route IFR aircraft.
(Refer to AIM.)

EN ROUTE CHARTS–
(See AERONAUTICAL CHART.)

EN ROUTE DECISION SUPPORT TOOL (EDST)– An automated tool provided at each Radar Associate position in selected En Route facilities. This tool utilizes flight and radar data to determine present and

future trajectories for all active and proposal aircraft and provides enhanced automated flight data management.

EN ROUTE DESCENT– Descent from the en route cruising altitude which takes place along the route of flight.

EN ROUTE HIGH ALTITUDE CHARTS–
(See AERONAUTICAL CHART.)

EN ROUTE LOW ALTITUDE CHARTS–
(See AERONAUTICAL CHART.)

EN ROUTE MINIMUM SAFE ALTITUDE WARNING (E–MSAW)– A function of the EAS that aids the controller by providing an alert when a tracked aircraft is below or predicted by the computer to go below a predetermined minimum IFR altitude (MIA).

EN ROUTE TRANSITION–
(See SEGMENTS OF A SID/STAR.)

EN ROUTE TRANSITION WAYPOINT
(See SEGMENTS OF A SID/STAR.)

EST–
(See ESTIMATED.)

ESTABLISHED– To be stable or fixed at an altitude or on a course, route, route segment, heading, instrument approach or departure procedure, etc.

ESTABLISHED ON RNP (EoR) CONCEPT– A system of authorized instrument approaches, ATC procedures, surveillance, and communication requirements that allow aircraft operations to be safely conducted with approved reduced separation criteria once aircraft are established on a PBN segment of a published instrument flight procedure.

ESTIMATED (EST)–When used in NOTAMs "EST" is a contraction that is used by the issuing authority only when the condition is expected to return to service prior to the expiration time. Using "EST" lets the user know that this NOTAM has the possibility of returning to service earlier than the expiration time. Any NOTAM which includes an "EST" will be auto–expired at the designated expiration time.

ESTIMATED ELAPSED TIME [ICAO]– The estimated time required to proceed from one significant point to another.
(See ICAO Term TOTAL ESTIMATED ELAPSED TIME.)

ESTIMATED OFF-BLOCK TIME [ICAO]– The estimated time at which the aircraft will commence movement associated with departure.

ESTIMATED POSITION ERROR (EPE)–
(See Required Navigation Performance)

ESTIMATED TIME OF ARRIVAL– The time the flight is estimated to arrive at the gate (scheduled operators) or the actual runway on times for nonscheduled operators.

ESTIMATED TIME EN ROUTE– The estimated flying time from departure point to destination (lift-off to touchdown).

ETA–
(See ESTIMATED TIME OF ARRIVAL.)

ETE–
(See ESTIMATED TIME EN ROUTE.)

EXECUTE MISSED APPROACH– Instructions issued to a pilot making an instrument approach which means continue inbound to the missed approach point and execute the missed approach procedure as described on the Instrument Approach Procedure Chart or as previously assigned by ATC. The pilot may climb immediately to the altitude specified in the missed approach procedure upon making a missed approach. No turns should be initiated prior to reaching the missed approach point. When conducting an ASR or PAR approach, execute the assigned missed approach procedure immediately upon receiving instructions to "execute missed approach."
(Refer to AIM.)

EXPECT (ALTITUDE) AT (TIME) or (FIX)– Used under certain conditions to provide a pilot with an altitude to be used in the event of two-way communications failure. It also provides altitude information to assist the pilot in planning.
(Refer to AIM.)

EXPECT DEPARTURE CLEARANCE TIME (EDCT)– The runway release time assigned to an aircraft in a traffic management program and shown on the flight progress strip as an EDCT.
(See GROUND DELAY PROGRAM.)

EXPECT FURTHER CLEARANCE (TIME)– The time a pilot can expect to receive clearance beyond a clearance limit.

EXPECT FURTHER CLEARANCE VIA (AIRWAYS, ROUTES OR FIXES)– Used to inform a

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

EXPEDITE – Used by ATC when prompt compliance is required to avoid the development of an imminent situation. Expedite climb/descent normally indicates to a pilot that the approximate best rate of climb/descent should be used without requiring an exceptional change in aircraft handling characteristics.

H

HAA–
(See HEIGHT ABOVE AIRPORT.)

HAL–
(See HEIGHT ABOVE LANDING.)

HANDOFF– An action taken to transfer the radar identification of an aircraft from one controller to another if the aircraft will enter the receiving controller's airspace and radio communications with the aircraft will be transferred.

HAT–
(See HEIGHT ABOVE TOUCHDOWN.)

HAVE NUMBERS– Used by pilots to inform ATC that they have received runway, wind, and altimeter information only.

HAZARDOUS WEATHER INFORMATION– Summary of significant meteorological information (SIGMET/WS), convective significant meteorological information (convective SIGMET/WST), urgent pilot weather reports (urgent PIREP/UUA), center weather advisories (CWA), airmen's meteorological information (AIRMET/WA) and any other weather such as isolated thunderstorms that are rapidly developing and increasing in intensity, or low ceilings and visibilities that are becoming widespread which is considered significant and are not included in a current hazardous weather advisory.

HEAVY (AIRCRAFT)–
(See AIRCRAFT CLASSES.)

HEIGHT ABOVE AIRPORT (HAA)– The height of the Minimum Descent Altitude above the published airport elevation. This is published in conjunction with circling minimums.
(See MINIMUM DESCENT ALTITUDE.)

HEIGHT ABOVE LANDING (HAL)– The height above a designated helicopter landing area used for helicopter instrument approach procedures.
(Refer to 14 CFR Part 97.)

HEIGHT ABOVE TOUCHDOWN (HAT)– The height of the Decision Height or Minimum Descent Altitude above the highest runway elevation in the touchdown zone (first 3,000 feet of the runway). HAT is published on instrument approach charts in conjunction with all straight-in minimums.
(See DECISION HEIGHT.)
(See MINIMUM DESCENT ALTITUDE.)

HELICOPTER– A heavier-than-air aircraft supported in flight chiefly by the reactions of the air on one or more power-driven rotors on substantially vertical axes.

HELIPAD– A small, designated area, usually with a prepared surface, on a heliport, airport, landing/takeoff area, apron/ramp, or movement area used for takeoff, landing, or parking of helicopters.

HELIPORT– An area of land, water, or structure used or intended to be used for the landing and takeoff of helicopters and includes its buildings and facilities if any.

HELIPORT REFERENCE POINT (HRP)– The geographic center of a heliport.

HERTZ– The standard radio equivalent of frequency in cycles per second of an electromagnetic wave. Kilohertz (kHz) is a frequency of one thousand cycles per second. Megahertz (MHz) is a frequency of one million cycles per second.

HF–
(See HIGH FREQUENCY.)

HF COMMUNICATIONS–
(See HIGH FREQUENCY COMMUNICATIONS.)

HIGH FREQUENCY– The frequency band between 3 and 30 MHz.
(See HIGH FREQUENCY COMMUNICATIONS.)

HIGH FREQUENCY COMMUNICATIONS– High radio frequencies (HF) between 3 and 30 MHz used for air-to-ground voice communication in overseas operations.

HIGH SPEED EXIT–
(See HIGH SPEED TAXIWAY.)

HIGH SPEED TAXIWAY– A long radius taxiway designed and provided with lighting or marking to define the path of aircraft, traveling at high speed (up to 60 knots), from the runway center to a point on the center of a taxiway. Also referred to as long radius exit or turn-off taxiway. The high speed taxiway is

designed to expedite aircraft turning off the runway after landing, thus reducing runway occupancy time.

HIGH SPEED TURNOFF–
(See HIGH SPEED TAXIWAY.)

HIGH UPDATE RATE SURVEILLANCE– A surveillance system that provides a sensor update rate of less than 4.8 seconds.

HOLD FOR RELEASE– Used by ATC to delay an aircraft for traffic management reasons; i.e., weather, traffic volume, etc. Hold for release instructions (including departure delay information) are used to inform a pilot or a controller (either directly or through an authorized relay) that an IFR departure clearance is not valid until a release time or additional instructions have been received.
(See ICAO term HOLDING POINT.)

HOLD–IN–LIEU OF PROCEDURE TURN– A hold–in–lieu of procedure turn shall be established over a final or intermediate fix when an approach can be made from a properly aligned holding pattern. The hold–in–lieu of procedure turn permits the pilot to align with the final or intermediate segment of the approach and/or descend in the holding pattern to an altitude that will permit a normal descent to the final approach fix altitude. The hold–in–lieu of procedure turn is a required maneuver (the same as a procedure turn) unless the aircraft is being radar vectored to the final approach course, when "NoPT" is shown on the approach chart, or when the pilot requests or the controller advises the pilot to make a "straight–in" approach.

HOLD PROCEDURE– A predetermined maneuver which keeps aircraft within a specified airspace while awaiting further clearance from air traffic control. Also used during ground operations to keep aircraft within a specified area or at a specified point while awaiting further clearance from air traffic control.
(See HOLDING FIX.)
(Refer to AIM.)

HOLDING FIX– A specified fix identifiable to a pilot by NAVAIDs or visual reference to the ground used as a reference point in establishing and maintaining the position of an aircraft while holding.
(See FIX.)
(See VISUAL HOLDING.)
(Refer to AIM.)

HOLDING POINT [ICAO]– A specified location, identified by visual or other means, in the vicinity of which the position of an aircraft in flight is maintained in accordance with air traffic control clearances.

HOLDING PROCEDURE–
(See HOLD PROCEDURE.)

HOLD-SHORT POINT– A point on the runway beyond which a landing aircraft with a LAHSO clearance is not authorized to proceed. This point may be located prior to an intersecting runway, taxiway, predetermined point, or approach/departure flight path.

HOLD-SHORT POSITION LIGHTS– Flashing in-pavement white lights located at specified hold-short points.

HOLD-SHORT POSITION MARKING– The painted runway marking located at the hold-short point on all LAHSO runways.

HOLD-SHORT POSITION SIGNS– Red and white holding position signs located alongside the hold-short point.

HOMING– Flight toward a NAVAID, without correcting for wind, by adjusting the aircraft heading to maintain a relative bearing of zero degrees.
(See BEARING.)
(See ICAO term HOMING.)

HOMING [ICAO]– The procedure of using the direction-finding equipment of one radio station with the emission of another radio station, where at least one of the stations is mobile, and whereby the mobile station proceeds continuously towards the other station.

HOT SPOT– A location on an airport movement area with a history of potential risk of collision or runway incursion, and where heightened attention by pilots/drivers is necessary.

HOVER CHECK– Used to describe when a helicopter/VTOL aircraft requires a stabilized hover to conduct a performance/power check prior to hover taxi, air taxi, or takeoff. Altitude of the hover will vary based on the purpose of the check.

HOVER TAXI– Used to describe a helicopter/VTOL aircraft movement conducted above the surface and in ground effect at airspeeds less than approximately 20 knots. The actual height may vary, and some helicopters may require hover taxi above 25 feet AGL

to reduce ground effect turbulence or provide clearance for cargo slingloads.

(See AIR TAXI.)

(See HOVER CHECK.)

(Refer to AIM.)

HOW DO YOU HEAR ME?– A question relating to the quality of the transmission or to determine how well the transmission is being received.

HZ–

(See HERTZ.)

MILITARY OPERATIONS AREA–
(See SPECIAL USE AIRSPACE.)

MILITARY TRAINING ROUTES– Airspace of defined vertical and lateral dimensions established for the conduct of military flight training at airspeeds in excess of 250 knots IAS.
(See IFR MILITARY TRAINING ROUTES.)
(See VFR MILITARY TRAINING ROUTES.)

MINIMA–
(See MINIMUMS.)

MINIMUM CROSSING ALTITUDE (MCA)– The lowest altitude at certain fixes at which an aircraft must cross when proceeding in the direction of a higher minimum en route IFR altitude (MEA).
(See MINIMUM EN ROUTE IFR ALTITUDE.)

MINIMUM DESCENT ALTITUDE (MDA)– The lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circle-to-land maneuvering in execution of a standard instrument approach procedure where no electronic glideslope is provided.
(See NONPRECISION APPROACH PROCEDURE.)

MINIMUM EN ROUTE IFR ALTITUDE (MEA)– The lowest published altitude between radio fixes which assures acceptable navigational signal coverage and meets obstacle clearance requirements between those fixes. The MEA prescribed for a Federal airway or segment thereof, area navigation low or high route, or other direct route applies to the entire width of the airway, segment, or route between the radio fixes defining the airway, segment, or route.
(Refer to 14 CFR Part 91.)
(Refer to 14 CFR Part 95.)
(Refer to AIM.)

MINIMUM FRICTION LEVEL– The friction level specified in AC 150/5320-12, Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces, that represents the minimum recommended wet pavement surface friction value for any turbojet aircraft engaged in LAHSO. This value will vary with the particular friction measurement equipment used.

MINIMUM FUEL– Indicates that an aircraft's fuel supply has reached a state where, upon reaching the destination, it can accept little or no delay. This is not an emergency situation but merely indicates an emergency situation is possible should any undue delay occur.
(Refer to AIM.)

MINIMUM HOLDING ALTITUDE– The lowest altitude prescribed for a holding pattern which assures navigational signal coverage, communications, and meets obstacle clearance requirements.

MINIMUM IFR ALTITUDES (MIA)– Minimum altitudes for IFR operations as prescribed in 14 CFR Part 91. These altitudes are published on aeronautical charts and prescribed in 14 CFR Part 95 for airways and routes, and in 14 CFR Part 97 for standard instrument approach procedures. If no applicable minimum altitude is prescribed in 14 CFR Part 95 or 14 CFR Part 97, the following minimum IFR altitude applies:

a. In designated mountainous areas, 2,000 feet above the highest obstacle within a horizontal distance of 4 nautical miles from the course to be flown; or

b. Other than mountainous areas, 1,000 feet above the highest obstacle within a horizontal distance of 4 nautical miles from the course to be flown; or

c. As otherwise authorized by the Administrator or assigned by ATC.
(See MINIMUM CROSSING ALTITUDE.)
(See MINIMUM EN ROUTE IFR ALTITUDE.)
(See MINIMUM OBSTRUCTION CLEARANCE ALTITUDE.)
(See MINIMUM SAFE ALTITUDE.)
(See MINIMUM VECTORING ALTITUDE.)
(Refer to 14 CFR Part 91.)

MINIMUM OBSTRUCTION CLEARANCE ALTITUDE (MOCA)– The lowest published altitude in effect between radio fixes on VOR airways, off-airway routes, or route segments which meets obstacle clearance requirements for the entire route segment and which assures acceptable navigational signal coverage only within 25 statute (22 nautical) miles of a VOR.
(Refer to 14 CFR Part 91.)
(Refer to 14 CFR Part 95.)

MINIMUM RECEPTION ALTITUDE (MRA)– The lowest altitude at which an intersection can be determined.
(Refer to 14 CFR Part 95.)

MINIMUM SAFE ALTITUDE (MSA)–

a. The Minimum Safe Altitude (MSA) specified in 14 CFR Part 91 for various aircraft operations.

b. Altitudes depicted on approach charts or departure procedure (DP) graphic charts which provide at least 1,000 feet of obstacle clearance for emergency use. These altitudes will be identified as Minimum Safe Altitudes or Emergency Safe Altitudes and are established as follows:

1. Minimum Safe Altitude (MSA). Altitudes depicted on approach charts or on a DP graphic chart which provide at least 1,000 feet of obstacle clearance within a 25–mile radius of the navigation facility, waypoint, or airport reference point upon which the MSA is predicated. MSAs are for emergency use only and do not necessarily assure acceptable navigational signal coverage.

(See ICAO term Minimum Sector Altitude.)

2. Emergency Safe Altitude (ESA). Altitudes depicted on approach charts which provide at least 1,000 feet of obstacle clearance in nonmountainous areas and 2,000 feet of obstacle clearance in designated mountainous areas within a 100-mile radius of the navigation facility or waypoint used as the ESA center. These altitudes are normally used only in military procedures and are identified on published procedures as "Emergency Safe Altitudes."

MINIMUM SAFE ALTITUDE WARNING (MSAW)– A function of the EAS and STARS computer that aids the controller by alerting him/her when a tracked Mode C equipped aircraft is below or is predicted by the computer to go below a predetermined minimum safe altitude.

(Refer to AIM.)

MINIMUM SECTOR ALTITUDE [ICAO]– The lowest altitude which may be used under emergency conditions which will provide a minimum clearance of 300 m (1,000 feet) above all obstacles located in an area contained within a sector of a circle of 46 km (25 NM) radius centered on a radio aid to navigation.

MINIMUMS– Weather condition requirements established for a particular operation or type of operation; e.g., IFR takeoff or landing, alternate airport for IFR flight plans, VFR flight, etc.

(See IFR CONDITIONS.)
(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)
(See LANDING MINIMUMS.)
(See VFR CONDITIONS.)
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

MINIMUM VECTORING ALTITUDE (MVA)– The lowest MSL altitude at which an IFR aircraft will be vectored by a radar controller, except as otherwise authorized for radar approaches, departures, and missed approaches. The altitude meets IFR obstacle clearance criteria. It may be lower than the published MEA along an airway or J-route segment. It may be utilized for radar vectoring only upon the controller's determination that an adequate radar return is being received from the aircraft being controlled. Charts depicting minimum vectoring altitudes are normally available only to the controllers and not to pilots.

(Refer to AIM.)

MINUTES-IN-TRAIL– A specified interval between aircraft expressed in time. This method would more likely be utilized regardless of altitude.

MIS–

(See METEOROLOGICAL IMPACT STATEMENT.)

MISSED APPROACH–

a. A maneuver conducted by a pilot when an instrument approach cannot be completed to a landing. The route of flight and altitude are shown on instrument approach procedure charts. A pilot executing a missed approach prior to the Missed Approach Point (MAP) must continue along the final approach to the MAP.

b. A term used by the pilot to inform ATC that he/she is executing the missed approach.

c. At locations where ATC radar service is provided, the pilot should conform to radar vectors when provided by ATC in lieu of the published missed approach procedure.

(See MISSED APPROACH POINT.)
(Refer to AIM.)

MISSED APPROACH POINT (MAP)– A point prescribed in each instrument approach procedure at

which a missed approach procedure shall be executed if the required visual reference does not exist.

(See MISSED APPROACH.)

(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

MISSED APPROACH PROCEDURE [ICAO]– The procedure to be followed if the approach cannot be continued.

MISSED APPROACH SEGMENT–

(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

MM–

(See MIDDLE MARKER.)

MOA–

(See MILITARY OPERATIONS AREA.)

MOCA–

(See MINIMUM OBSTRUCTION CLEARANCE ALTITUDE.)

MODE– The letter or number assigned to a specific pulse spacing of radio signals transmitted or received by ground interrogator or airborne transponder components of the Air Traffic Control Radar Beacon System (ATCRBS). Mode A (military Mode 3) and Mode C (altitude reporting) are used in air traffic control.

(See INTERROGATOR.)

(See RADAR.)

(See TRANSPONDER.)

(See ICAO term MODE.)

(Refer to AIM.)

MODE (SSR MODE) [ICAO]– The letter or number assigned to a specific pulse spacing of the interrogation signals transmitted by an interrogator. There are 4 modes, A, B, C and D specified in Annex 10, corresponding to four different interrogation pulse spacings.

MODE C INTRUDER ALERT– A function of certain air traffic control automated systems designed to alert radar controllers to existing or pending situations between a tracked target (known IFR or VFR aircraft) and an untracked target (unknown IFR or VFR aircraft) that requires immediate attention/action.

(See CONFLICT ALERT.)

MODEL AIRCRAFT– An unmanned aircraft that is: (1) capable of sustained flight in the atmosphere; (2) flown within visual line of sight of the person operating the aircraft; and (3) flown for hobby or recreational purposes.

MONITOR– (When used with communication transfer) listen on a specific frequency and stand by for instructions. Under normal circumstances do not establish communications.

MONITOR ALERT (MA)– A function of the TFMS that provides traffic management personnel with a tool for predicting potential capacity problems in individual operational sectors. The MA is an indication that traffic management personnel need to analyze a particular sector for actual activity and to determine the required action(s), if any, needed to control the demand.

MONITOR ALERT PARAMETER (MAP)– The number designated for use in monitor alert processing by the TFMS. The MAP is designated for each operational sector for increments of 15 minutes.

MOSAIC/MULTI–SENSOR MODE– Accepts positional data from multiple radar or ADS–B sites. Targets are displayed from a single source within a radar sort box according to the hierarchy of the sources assigned.

MOUNTAIN WAVE– Mountain waves occur when air is being blown over a mountain range or even the ridge of a sharp bluff area. As the air hits the upwind side of the range, it starts to climb, thus creating what is generally a smooth updraft which turns into a turbulent downdraft as the air passes the crest of the ridge. Mountain waves can cause significant fluctuations in airspeed and altitude with or without associated turbulence.

(Refer to AIM.)

MOVEMENT AREA– The runways, taxiways, and other areas of an airport/heliport which are utilized for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports/heliports with a tower, specific approval for entry onto the movement area must be obtained from ATC.

(See ICAO term MOVEMENT AREA.)

MOVEMENT AREA [ICAO]– That part of an aerodrome to be used for the takeoff, landing and taxiing of aircraft, consisting of the maneuvering area and the apron(s).

MOVING AIRSPACE RESERVATION– The term used in oceanic ATC for airspace that encompasses

oceanic activities and advances with the mission progress; i.e., the reservation moves with the aircraft or flight.

(See MOVING ALTITUDE RESERVATION.)

MOVING ALTITUDE RESERVATION– An altitude reservation which encompasses en route activities and advances with the mission progress; i.e., the reservation moves with the aircraft or flight.

MOVING TARGET INDICATOR– An electronic device which will permit radar scope presentation only from targets which are in motion. A partial remedy for ground clutter.

MRA–

(See MINIMUM RECEPTION ALTITUDE.)

MRE–

(See METER REFERENCE ELEMENT.)

MRP

(See METER REFERENCE POINT LIST.)

MSA–

(See MINIMUM SAFE ALTITUDE.)

MSAW–

(See MINIMUM SAFE ALTITUDE WARNING.)

MTI–

(See MOVING TARGET INDICATOR.)

MTR–

(See MILITARY TRAINING ROUTES.)

MULTICOM– A mobile service not open to public correspondence used to provide communications essential to conduct the activities being performed by or directed from private aircraft.

MULTIPLE RUNWAYS– The utilization of a dedicated arrival runway(s) for departures and a dedicated departure runway(s) for arrivals when feasible to reduce delays and enhance capacity.

MVA–

(See MINIMUM VECTORING ALTITUDE.)

O

OBSTACLE– An existing object, object of natural growth, or terrain at a fixed geographical location or which may be expected at a fixed location within a prescribed area with reference to which vertical clearance is or must be provided during flight operation.

OBSTACLE DEPARTURE PROCEDURE (ODP)– A preplanned instrument flight rule (IFR) departure procedure printed for pilot use in textual or graphic form to provide obstruction clearance via the least onerous route from the terminal area to the appropriate en route structure. ODPs are recommended for obstruction clearance and may be flown without ATC clearance unless an alternate departure procedure (SID or radar vector) has been specifically assigned by ATC.

(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)

(See STANDARD INSTRUMENT DEPARTURES.)

(Refer to AIM.)

OBSTACLE FREE ZONE– The OFZ is a three–dimensional volume of airspace which protects the transition of aircraft to and from the runway. The OFZ clearing standard precludes taxiing and parked airplanes and object penetrations, except for frangible NAVAID locations that are fixed by function. Additionally, vehicles, equipment, and personnel may be authorized by air traffic control to enter the area using the provisions of FAA Order JO 7110.65, paragraph 3–1–5, Vehicles/Equipment/Personnel Near/On Runways. The runway OFZ and when applicable, the inner-approach OFZ, and the inner-transitional OFZ, comprise the OFZ.

a. Runway OFZ. The runway OFZ is a defined volume of airspace centered above the runway. The runway OFZ is the airspace above a surface whose elevation at any point is the same as the elevation of the nearest point on the runway centerline. The runway OFZ extends 200 feet beyond each end of the runway. The width is as follows:

1. For runways serving large airplanes, the greater of:

(a) 400 feet, or

(b) 180 feet, plus the wingspan of the most demanding airplane, plus 20 feet per 1,000 feet of airport elevation.

2. For runways serving only small airplanes:

(a) 300 feet for precision instrument runways.

(b) 250 feet for other runways serving small airplanes with approach speeds of 50 knots, or more.

(c) 120 feet for other runways serving small airplanes with approach speeds of less than 50 knots.

b. Inner-approach OFZ. The inner-approach OFZ is a defined volume of airspace centered on the approach area. The inner-approach OFZ applies only to runways with an approach lighting system. The inner-approach OFZ begins 200 feet from the runway threshold at the same elevation as the runway threshold and extends 200 feet beyond the last light unit in the approach lighting system. The width of the inner-approach OFZ is the same as the runway OFZ and rises at a slope of 50 (horizontal) to 1 (vertical) from the beginning.

c. Inner-transitional OFZ. The inner transitional surface OFZ is a defined volume of airspace along the sides of the runway and inner-approach OFZ and applies only to precision instrument runways. The inner-transitional surface OFZ slopes 3 (horizontal) to 1 (vertical) out from the edges of the runway OFZ and inner-approach OFZ to a height of 150 feet above the established airport elevation.

(Refer to AC 150/5300-13, Chapter 3.)

(Refer to FAA Order JO 7110.65, Para 3–1–5, Vehicles/Equipment/Personnel Near/On Runways.)

OBSTRUCTION– Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, Subpart C.

OBSTRUCTION LIGHT– A light or one of a group of lights, usually red or white, frequently mounted on a surface structure or natural terrain to warn pilots of the presence of an obstruction.

OCEANIC AIRSPACE– Airspace over the oceans of the world, considered international airspace, where oceanic separation and procedures per the International Civil Aviation Organization are applied. Responsibility for the provisions of air traffic control

service in this airspace is delegated to various countries, based generally upon geographic proximity and the availability of the required resources.

OCEANIC ERROR REPORT– A report filed when ATC observes an Oceanic Error as defined by FAA Order JO 7210.632, Air Traffic Organization Occurrence Reporting.

OCEANIC PUBLISHED ROUTE– A route established in international airspace and charted or described in flight information publications, such as Route Charts, DOD En route Charts, Chart Supplements, NOTAMs, and Track Messages.

OCEANIC TRANSITION ROUTE– An ATS route established for the purpose of transitioning aircraft to/from an organized track system.

ODP–
(See OBSTACLE DEPARTURE PROCEDURE.)

OFF COURSE– A term used to describe a situation where an aircraft has reported a position fix or is observed on radar at a point not on the ATC-approved route of flight.

OFF–ROUTE OBSTRUCTION CLEARANCE ALTITUDE (OROCA)– A published altitude which provides terrain and obstruction clearance with a 1,000 foot buffer in non–mountainous areas and a 2,000 foot buffer in designated mountainous areas within the United States, and a 3,000 foot buffer outside the US ADIZ. These altitudes are not assessed for NAVAID signal coverage, air traffic control surveillance, or communications coverage, and are published for general situational awareness, flight planning, and in–flight contingency use.

OFF-ROUTE VECTOR– A vector by ATC which takes an aircraft off a previously assigned route. Altitudes assigned by ATC during such vectors provide required obstacle clearance.

OFFSET PARALLEL RUNWAYS– Staggered runways having centerlines which are parallel.

OFFSHORE/CONTROL AIRSPACE AREA– That portion of airspace between the U.S. 12 NM limit and the oceanic CTA/FIR boundary within which air traffic control is exercised. These areas are established to provide air traffic control services. Offshore/Control Airspace Areas may be classified as either Class A airspace or Class E airspace.

OFT–
(See OUTER FIX TIME.)

OM–
(See OUTER MARKER.)

ON COURSE–

a. Used to indicate that an aircraft is established on the route centerline.

b. Used by ATC to advise a pilot making a radar approach that his/her aircraft is lined up on the final approach course.
(See ON-COURSE INDICATION.)

ON-COURSE INDICATION– An indication on an instrument, which provides the pilot a visual means of determining that the aircraft is located on the centerline of a given navigational track, or an indication on a radar scope that an aircraft is on a given track.

ONE-MINUTE WEATHER– The most recent one minute updated weather broadcast received by a pilot from an uncontrolled airport ASOS/AWOS.

ONER–
(See OCEANIC NAVIGATIONAL ERROR REPORT.)

OPEN LOOP CLEARANCE– Provides a lateral vector solution that does not include a return to route point.

OPERATIONAL–
(See DUE REGARD.)

OPERATIONS SPECIFICATIONS [ICAO]– The authorizations, conditions and limitations associated with the air operator certificate and subject to the conditions in the operations manual.

OPPOSITE DIRECTION AIRCRAFT– Aircraft are operating in opposite directions when:

a. They are following the same track in reciprocal directions; or

b. Their tracks are parallel and the aircraft are flying in reciprocal directions; or

c. Their tracks intersect at an angle of more than 135°.

OPTION APPROACH– An approach requested and conducted by a pilot which will result in either a touch-and-go, missed approach, low approach, stop-and-go, or full stop landing. Pilots should advise ATC if they decide to remain on the runway, of any

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 AC 00–45, Aviation Weather Services.)

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 non–radar 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.)

PRIMARY RADAR TARGET– An analog or digital target, exclusive of a secondary radar target, presented on a radar display.

PRM–
(See AREA NAVIGATION (RNAV) GLOBAL POSITIONING SYSTEM (GPS) PRECISION RUNWAY MONITORING (PRM) APPROACH.)
(See PRM APPROACH.)
(See PRECISION RUNWAY MONITOR SYSTEM.)

PRM APPROACH– An instrument approach procedure titled ILS PRM, RNAV PRM, LDA PRM, or GLS PRM conducted to parallel runways separated by less than 4,300 feet and at least 3,000 feet where independent closely spaced approaches are permitted. Use of an enhanced display with alerting, a No Transgression Zone (NTZ), secondary monitor frequency, pilot PRM training, and publication of an Attention All Users Page are required for all PRM approaches. Depending on the runway spacing, the approach courses may be parallel or one approach course must be offset. PRM procedures are also used to conduct Simultaneous Offset Instrument Approach (SOIA) operations. In SOIA, one straight–in ILS PRM, RNAV PRM, GLS PRM, and one offset LDA PRM, RNAV PRM or GLS PRM approach are utilized. PRM procedures are terminated and a visual segment begins at the offset approach missed approach point where the minimum distance between the approach courses is 3000 feet. Runway spacing can be as close as 750 feet.

(Refer to AIM.)

PROCEDURAL CONTROL [ICAO]– Term used to indicate that information derived from an ATS surveillance system is not required for the provision of air traffic control service.

PROCEDURAL SEPARATION [ICAO]– The separation used when providing procedural control.

PROCEDURE TURN– The maneuver prescribed when it is necessary to reverse direction to establish an aircraft on the intermediate approach segment or final approach course. The outbound course, direction of turn, distance within which the turn must be completed, and minimum altitude are specified in the procedure. However, unless otherwise restricted, the point at which the turn may be commenced and the type and rate of turn are left to the discretion of the pilot.

(See ICAO term PROCEDURE TURN.)

PROCEDURE TURN [ICAO]– A maneuver in which a turn is made away from a designated track followed by a turn in the opposite direction to permit the aircraft to intercept and proceed along the reciprocal of the designated track.

Note 1: Procedure turns are designated "left" or "right" according to the direction of the initial turn.

Note 2: Procedure turns may be designated as being made either in level flight or while descending, according to the circumstances of each individual approach procedure.

PROCEDURE TURN INBOUND– That point of a procedure turn maneuver where course reversal has been completed and an aircraft is established inbound on the intermediate approach segment or final approach course. A report of "procedure turn inbound" is normally used by ATC as a position report for separation purposes.

(See FINAL APPROACH COURSE.)
(See PROCEDURE TURN.)
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

PROFILE DESCENT– An uninterrupted descent (except where level flight is required for speed adjustment; e.g., 250 knots at 10,000 feet MSL) from cruising altitude/level to interception of a glideslope

or to a minimum altitude specified for the initial or intermediate approach segment of a nonprecision instrument approach. The profile descent normally terminates at the approach gate or where the glideslope or other appropriate minimum altitude is intercepted.

PROGRESS REPORT–
(See POSITION REPORT.)

PROGRESSIVE TAXI– Precise taxi instructions given to a pilot unfamiliar with the airport or issued in stages as the aircraft proceeds along the taxi route.

PROHIBITED AREA–
(See SPECIAL USE AIRSPACE.)
(See ICAO term PROHIBITED AREA.)

PROHIBITED AREA [ICAO]– An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited.

PROMINENT OBSTACLE– An obstacle that meets one or more of the following conditions:

a. An obstacle which stands out beyond the adjacent surface of surrounding terrain and immediately projects a noticeable hazard to aircraft in flight.

b. An obstacle, not characterized as low and close in, whose height is no less than 300 feet above the departure end of takeoff runway (DER) elevation, is within 10 NM from the DER, and that penetrates that airport/heliport's diverse departure obstacle clearance surface (OCS).

c. An obstacle beyond 10 NM from an airport/heliport that requires an obstacle departure procedure (ODP) to ensure obstacle avoidance.

(See OBSTACLE.)
(See OBSTRUCTION.)

PROPELLER (PROP) WASH (PROP BLAST)– The disturbed mass of air generated by the motion of a propeller.

PROPOSED BOUNDARY CROSSING TIME– Each center has a PBCT parameter for each internal airport. Proposed internal flight plans are transmitted to the adjacent center if the flight time along the proposed route from the departure airport to the center boundary is less than or equal to the value of PBCT or if airport adaptation specifies transmission regardless of PBCT.

PROPOSED DEPARTURE TIME– The time that the aircraft expects to become airborne.

PROTECTED AIRSPACE– The airspace on either side of an oceanic route/track that is equal to one-half the lateral separation minimum except where reduction of protected airspace has been authorized.

PROTECTED SEGMENT- The protected segment is a segment on the amended TFM route that is to be inhibited from automatic adapted route alteration by ERAM.

PT–
(See PROCEDURE TURN.)

PTP–
(See POINT–TO–POINT.)

PTS–
(See POLAR TRACK STRUCTURE.)

PUBLISHED INSTRUMENT APPROACH PROCEDURE VISUAL SEGMENT– A segment on an IAP chart annotated as "Fly Visual to Airport" or "Fly Visual." A dashed arrow will indicate the visual flight path on the profile and plan view with an associated note on the approximate heading and distance. The visual segment should be flown as a dead reckoning course while maintaining visual conditions.

PUBLISHED ROUTE– A route for which an IFR altitude has been established and published; e.g., Federal Airways, Jet Routes, Area Navigation Routes, Specified Direct Routes.

PWS–
(See PREDICTIVE WIND SHEAR ALERT SYSTEM.)

potential danger. A warning area may be located over domestic or international waters or both.

SPECIAL VFR CONDITIONS– Meteorological conditions that are less than those required for basic VFR flight in Class B, C, D, or E surface areas and in which some aircraft are permitted flight under visual flight rules.

(See SPECIAL VFR OPERATIONS.)

(Refer to 14 CFR Part 91.)

SPECIAL VFR FLIGHT [ICAO]– A VFR flight cleared by air traffic control to operate within Class B, C, D, and E surface areas in meteorological conditions below VMC.

SPECIAL VFR OPERATIONS– Aircraft operating in accordance with clearances within Class B, C, D, and E surface areas in weather conditions less than the basic VFR weather minima. Such operations must be requested by the pilot and approved by ATC.

(See SPECIAL VFR CONDITIONS.)

(See ICAO term SPECIAL VFR FLIGHT.)

SPEED–

(See AIRSPEED.)

(See GROUND SPEED.)

SPEED ADJUSTMENT– An ATC procedure used to request pilots to adjust aircraft speed to a specific value for the purpose of providing desired spacing. Pilots are expected to maintain a speed of plus or minus 10 knots or 0.02 Mach number of the specified speed. Examples of speed adjustments are:

a. "Increase/reduce speed to Mach point (number)."

b. "Increase/reduce speed to (speed in knots)" or "Increase/reduce speed (number of knots) knots."

SPEED BRAKES– Moveable aerodynamic devices on aircraft that reduce airspeed during descent and landing.

SPEED SEGMENTS– Portions of the arrival route between the transition point and the vertex along the optimum flight path for which speeds and altitudes are specified. There is one set of arrival speed segments adapted from each transition point to each vertex. Each set may contain up to six segments.

SPOOFING– Denotes emissions of GNSS–like signals that may be acquired and tracked in combination with or instead of the intended signals by civil receivers. The onset of spoofing effects can be instantaneous or delayed, and effects can persist after the spoofing has ended. Spoofing can result in false and potentially confusing, or hazardously misleading, position, navigation, and/or date/time information in addition to loss of GNSS use.

SPEED ADVISORY– Speed advisories that are generated within Time–Based Flow Management to assist controllers to meet the Scheduled Time of Arrival (STA) at the meter fix/meter arc. See also Ground–Based Interval Management–Spacing (GIM–S) Speed Advisory.

SQUAWK (Mode, Code, Function)– Used by ATC to instruct a pilot to activate the aircraft transponder and ADS–B Out with altitude reporting enabled, or (military) to activate only specific modes, codes, or functions. Examples: "Squawk five seven zero seven;" "Squawk three/alpha, two one zero five."

(See TRANSPONDER.)

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.

STRAIGHT-IN APPROACH IFR– An instrument approach wherein final approach is begun without first having executed a procedure turn, not necessarily completed with a straight-in landing or made to straight-in landing minimums.

(See LANDING MINIMUMS.)
(See STRAIGHT-IN APPROACH VFR.)
(See STRAIGHT-IN LANDING.)

STRAIGHT-IN APPROACH VFR– Entry into the traffic pattern by interception of the extended runway centerline (final approach course) without executing any other portion of the traffic pattern.

(See TRAFFIC PATTERN.)

STRAIGHT-IN LANDING– A landing made on a runway aligned within 30° of the final approach course following completion of an instrument approach.

(See STRAIGHT-IN APPROACH IFR.)

STRAIGHT-IN LANDING MINIMUMS–

(See LANDING MINIMUMS.)

STRAIGHT-IN MINIMUMS–

(See STRAIGHT-IN LANDING MINIMUMS.)

STRATEGIC PLANNING– Planning whereby solutions are sought to resolve potential conflicts.

sUAS–

(See SMALL UNMANNED AIRCRAFT SYSTEM.)

SUBSTITUTE ROUTE– A route assigned to pilots when any part of an airway or route is unusable because of NAVAID status. These routes consist of:

a. Substitute routes which are shown on U.S. Government charts.

b. Routes defined by ATC as specific NAVAID radials or courses.

c. Routes defined by ATC as direct to or between NAVAIDs.

SUNSET AND SUNRISE– The mean solar times of sunset and sunrise as published in the Nautical Almanac, converted to local standard time for the locality concerned. Within Alaska, the end of evening civil twilight and the beginning of morning civil twilight, as defined for each locality.

SUPPLEMENTAL WEATHER SERVICE LOCATION– Airport facilities staffed with contract personnel who take weather observations and provide current local weather to pilots via telephone or radio. (All other services are provided by the parent FSS.)

SUPPS– Refers to ICAO Document 7030 Regional Supplementary Procedures. SUPPS contain procedures for each ICAO Region which are unique to that Region and are not covered in the worldwide provisions identified in the ICAO Air Navigation Plan. Procedures contained in Chapter 8 are based in part on those published in SUPPS.

SURFACE AREA– The airspace contained by the lateral boundary of the Class B, C, D, or E airspace designated for an airport that begins at the surface and extends upward.

SURFACE METERING PROGRAM– A capability within Terminal Flight Data Manager that provides the user with the ability to tactically manage surface traffic flows through adjusting desired minimum and maximum departure queue lengths to balance surface demand with capacity. When a demand/capacity imbalance for a surface resource is predicted, a metering procedure is recommended.

SURFACE VIEWER– A capability within the Traffic Flow Management System that provides situational awareness for a user–selected airport. The Surface Viewer displays a top–down view of an airport depicting runways, taxiways, gate areas, ramps, and buildings. The display also includes icons representing aircraft and vehicles currently on the surface, with identifying information. In addition, the display includes current airport configuration information such as departure/arrival runways and airport departure/arrival rates.

SURPIC– A description of surface vessels in the area of a Search and Rescue incident including their predicted positions and their characteristics.

(Refer to FAA Order JO 7110.65, Para 10–6–4, INFLIGHT CONTINGENCIES.)

SURVEILLANCE APPROACH– An instrument approach wherein the air traffic controller issues instructions, for pilot compliance, based on aircraft position in relation to the final approach course (azimuth), and the distance (range) from the end of the runway as displayed on the controller's radar scope. The controller will provide recommended altitudes on final approach if requested by the pilot.
(Refer to AIM.)

SUSPICIOUS UAS– Suspicious UAS operations may include operating without authorization, loitering in the vicinity of sensitive locations, (e.g., national security, law enforcement facilities, and critical infrastructure), or disrupting normal air traffic operations resulting in runway changes, ground stops, pilot evasive action, etc. The report of a UAS operation alone does not constitute suspicious activity. Development of a comprehensive list of suspicious activities is not possible due to the vast number of situations that could be considered suspicious. ATC must exercise sound judgment when identifying situations that could constitute or indicate a suspicious activity.

SWAP–
(See SEVERE WEATHER AVOIDANCE PLAN.)

SWSL–
(See SUPPLEMENTAL WEATHER SERVICE LOCATION.)

SYSTEM STRATEGIC NAVIGATION– Military activity accomplished by navigating along a preplanned route using internal aircraft systems to maintain a desired track. This activity normally requires a lateral route width of 10 NM and altitude range of 1,000 feet to 6,000 feet AGL with some route segments that permit terrain following.

T

TACAN–
(See TACTICAL AIR NAVIGATION.)

TACAN-ONLY AIRCRAFT– An aircraft, normally military, possessing TACAN with DME but no VOR navigational system capability. Clearances must specify TACAN or VORTAC fixes and approaches.

TACTICAL AIR NAVIGATION (TACAN)– An ultra-high frequency electronic rho-theta air navigation aid which provides suitably equipped aircraft a continuous indication of bearing and distance to the TACAN station.
(See VORTAC.)
(Refer to AIM.)

TAILWIND– Any wind more than 90 degrees to the longitudinal axis of the runway. The magnetic direction of the runway shall be used as the basis for determining the longitudinal axis.

TAKEOFF AREA–
(See LANDING AREA.)

TAKEOFF DISTANCE AVAILABLE (TODA)– The takeoff run available plus the length of any remaining runway or clearway beyond the far end of the takeoff run available.
(See ICAO term TAKEOFF DISTANCE AVAILABLE.)

TAKEOFF DISTANCE AVAILABLE [ICAO]– The length of the takeoff run available plus the length of the clearway, if provided.

TAKEOFF HOLD LIGHTS (THL)– The THL system is composed of in-pavement lighting in a double, longitudinal row of lights aligned either side of the runway centerline. The lights are focused toward the arrival end of the runway at the "line up and wait" point, and they extend for 1,500 feet in front of the holding aircraft. Illuminated red lights indicate to an aircraft in position for takeoff or rolling that it is unsafe to takeoff because the runway is occupied or about to be occupied by an aircraft or vehicle.

TAKEOFF ROLL – The process whereby an aircraft is aligned with the runway centerline and the aircraft is moving with the intent to take off. For helicopters, this pertains to the act of becoming airborne after departing a takeoff area.

TAKEOFF RUN AVAILABLE (TORA) – The runway length declared available and suitable for the ground run of an airplane taking off.
(See ICAO term TAKEOFF RUN AVAILABLE.)

TAKEOFF RUN AVAILABLE [ICAO]– The length of runway declared available and suitable for the ground run of an aeroplane take-off.

TARGET– The indication shown on a display resulting from a primary radar return, a radar beacon reply, or an ADS–B report. The specific target symbol presented to ATC may vary based on the surveillance source and automation platform.
(See ASSOCIATED.)
(See DIGITAL TARGET.)
(See DIGITIZED RADAR TARGET.)
(See FUSED TARGET.)
(See PRIMARY RADAR TARGET.)
(See RADAR.)
(See SECONDARY RADAR TARGET.)
(See ICAO term TARGET.)
(See UNASSOCIATED.)

TARGET [ICAO]– In radar:

a. Generally, any discrete object which reflects or retransmits energy back to the radar equipment.

b. Specifically, an object of radar search or surveillance.

TARGET RESOLUTION– A process to ensure that correlated radar targets do not touch. Target resolution must be applied as follows:

a. Between the edges of two primary targets or the edges of the ASR-9/11 primary target symbol.

b. Between the end of the beacon control slash and the edge of a primary target.

c. Between the ends of two beacon control slashes.

Note 1: Mandatory traffic advisories and safety alerts must be issued when this procedure is used.

Note 2: This procedure must not be used when utilizing mosaic radar systems or multi–sensor mode.

TARGET SYMBOL–
(See TARGET.)
(See ICAO term TARGET.)

TARMAC DELAY– The holding of an aircraft on the ground either before departure or after landing with no opportunity for its passengers to deplane.

TARMAC DELAY AIRCRAFT– An aircraft whose pilot–in–command has requested to taxi to the ramp, gate, or alternate deplaning area to comply with the Three–hour Tarmac Rule.

TARMAC DELAY REQUEST– A request by the pilot–in–command to taxi to the ramp, gate, or alternate deplaning location to comply with the Three–hour Tarmac Rule.

TAS–
(See TERMINAL AUTOMATION SYSTEMS.)

TAWS–
(See TERRAIN AWARENESS WARNING SYSTEM.)

TAXI– The movement of an airplane under its own power on the surface of an airport (14 CFR Section 135.100 [Note]). Also, it describes the surface movement of helicopters equipped with wheels.
(See AIR TAXI.)
(See HOVER TAXI.)
(Refer to 14 CFR Section 135.100.)
(Refer to AIM.)

TAXI PATTERNS– Patterns established to illustrate the desired flow of ground traffic for the different runways or airport areas available for use.

TBM–
(See TIME–BASED MANAGEMENT.)

TBO–
(See TRAJECTORY–BASED OPERATIONS.)

TCAS–
(See TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM.)

TCH–
(See THRESHOLD CROSSING HEIGHT.)

TDLS–
(See TERMINAL DATA LINK SYSTEM.)

TDZE–
(See TOUCHDOWN ZONE ELEVATION.)

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

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BRIEFING GUIDE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

Initiated By: AJV−0
Vice President, Mission Support Services

Table of Contents

1. PARAGRAPH NUMBER AND TITLE: 1−2−1. WORD MEANINGS

2. BACKGROUND: This paragraph intends to identify and address aircraft commander responsibilities. However, the last subparagraph identifies a shared responsibility between the pilot and the controller. Because the subparagraph is a shared responsibility, it should be separated from the other subparagraphs.

3. CHANGE:

OLD	NEW
1−2−1. WORD MEANINGS	**1−2−1. WORD MEANINGS**
Title through **n**	No Change
o. Flight operations in accordance with the options of "due regard" or "operational" obligates the authorized state aircraft commander to:	**o.** Flight operations in accordance with the options of "due regard" or "operational" **have the following requirements**:
Add	**1. Obligates the authorized state aircraft commander to:**
1. Separate his/her aircraft from all other air traffic; and	**(a)** Separate his/her aircraft from all other air traffic; and
2. Assure that an appropriate monitoring agency assumes responsibility for search and rescue actions; and	**(b)** Assure that an appropriate monitoring agency assumes responsibility for search and rescue actions; and
3. Operate under at least one of the following conditions:	**(c)** Operate under at least one of the following conditions:
(a) In visual meteorological conditions (VMC); or	**(1)** In visual meteorological conditions (VMC); or
(b) Within radar surveillance and radio communications of a surface radar facility; or	**(2)** Within radar surveillance and radio communications of a surface radar facility; or
(c) Be equipped with airborne radar that is sufficient to provide separation between his/her aircraft and any other aircraft he/she may be controlling and other aircraft; or	**(3)** Be equipped with airborne radar that is sufficient to provide separation between his/her aircraft and any other aircraft he/she may be controlling and other aircraft; or
(d) Operate within Class G airspace.	**(4)** Operate within Class G airspace.
(e) An understanding between the pilot and controller regarding the intent of the pilot and the status of the flight should be arrived at before the aircraft leaves ATC frequency.	**2.** An understanding between the pilot and controller regarding the intent of the pilot and the status of the flight should be **reached** before the aircraft leaves ATC frequency.
NOTE−	***NOTE−***
1. *A pilot's use of the phrase "Going Tactical" does not indicate "Due Regard." An understanding between the pilot and controller regarding the intent of the pilot and the status of the flight should be arrived at before the aircraft leaves air traffic control (ATC) frequency.*	**1.** *A pilot's use of the phrase "Going Tactical" does not indicate "Due Regard."*
2. *The above conditions provide for a level of safety equivalent to that normally given by International Civil Aviation Organization (ICAO) ATC agencies and fulfills U.S. Government obligations under Article 3 of the Chicago Convention of 1944 (Reference (d)), which stipulates there must be "due regard for the safety of navigation of civil aircraft" when flight is not being conducted under ICAO flight procedures.*	No Change

1. PARAGRAPH NUMBER AND TITLE: 2–1–13. FORMATION FLIGHTS

2. BACKGROUND: Reduced Vertical Separation Minima (RVSM) airspace begins at FL 290. FAA Order JO 7110.65, paragraph 4–5–1, Vertical Separation Minima, requires 2,000 feet separation for non–RVSM aircraft at or above FL 290. A review of en route training materials revealed a discrepancy in FAA Order JO 7110.65, paragraph 2–1–13, Formation Flights. Although RVSM separation begins at FL 290, paragraph 2–1–13 incorrectly directs use of non–RVSM separation for formation flights consisting of aircraft that are not RVSM–approved beginning above FL 290.

3. CHANGE:

OLD	NEW
2–1–13. FORMATION FLIGHTS	**2–1–13. FORMATION FLIGHTS**
Title through **e1**	No Change
2. Utilize non–RVSM separation standards for a formation flight above FL 290, which does not consist of all RVSM approved aircraft.	**2.** Utilize non–RVSM separation standards for a formation flight **at or** above FL 290, which does not consist of all RVSM approved aircraft.

1. PARAGRAPH NUMBER AND TITLE: 2–6–4. ISSUING WEATHER AND CHAFF AREAS

2. BACKGROUND: The Policy Directorate (AJV–P) received an interpretation request for FAA Order JO 7110.65, paragraph 2–6–4, Issuing Weather and Chaff Areas. This request drew attention to the use of the phrase "lateral deviation area" which is both vague and undefined. The language used in the AIM to describe weather deviation clearances is more clear and concise but differs from that used in FAA Order JO 7110.65. To reduce the potential for confusion and enhance consistency, the documents should be harmonized.

3. CHANGE:

OLD	NEW
2–6–4. ISSUING WEATHER AND CHAFF AREAS	**2–6–4. ISSUING WEATHER AND CHAFF AREAS**
Title through **h**	No Change
1. An approval for lateral deviation authorizes the pilot to maneuver left or right within the limits of the lateral deviation area.	**1.** An approval for lateral deviation authorizes the pilot to maneuver left or right within the **lateral** limits **specified in the clearance.**
REFERENCE– *AIM, Subpara 7–1–12b1(a) ATC Inflight Weather Avoidance Assistance*	No Change

1. PARAGRAPH NUMBER AND TITLE:
4–4–3. DEGREE–DISTANCE ROUTE DEFINITION FOR MILITARY OPERATIONS

2. BACKGROUND: The existing language allows military flight plans to be accepted using only designated airways or jet routes. Military flights are currently filing flight plans using Area Navigation (RNAV) routes, which are not considered airways or jet routes. Replacing airways and jet routes with Air Traffic Service (ATS) routes will capture all designated National Airspace System routes.

3. CHANGE:

OLD	NEW
4–4–3. DEGREE–DISTANCE ROUTE DEFINITION FOR MILITARY OPERATIONS	**4–4–3. DEGREE–DISTANCE ROUTE DEFINITION FOR MILITARY OPERATIONS**
EN ROUTE	No Change
a. Do not accept a military flight plan whose route or route segments do not coincide with designated airways or jet routes or with a direct course between NAVAIDs unless it is authorized in subparagraph b and meets the following degree–distance route definition and procedural requirements:	**a.** Do not accept a military flight plan whose route or route segments do not coincide with designated **Air Traffic Service** routes or with a direct course between NAVAIDs unless it is authorized in subparagraph b and meets the following degree–distance route definition and procedural requirements:

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1. PARAGRAPH NUMBER AND TITLE: 5–1–4. MERGING TARGET PROCEDURES

2. BACKGROUND: The example provided in paragraph 5–1–4, Merging Target Procedures, is ambiguous because 2,000 feet vertical separation is more than the minimum in some instances, and is the minimum in others. Additionally, neither American Airlines nor United Airlines still fly the B727, and it has been largely replaced in other fleets as well with newer aircraft models.

3. CHANGE:

OLD	NEW
5–1–4. MERGING TARGET PROCEDURES	**5–1–4. MERGING TARGET PROCEDURES**
Title through **a3**	No Change
b. Issue traffic information to those aircraft listed in subparagraph a whose targets appear likely to merge unless the aircraft are separated by more than the appropriate vertical separation minima.	**b.** Issue traffic information to **the** aircraft listed in subparagraph a whose targets appear likely to merge unless the aircraft are separated by more than the appropriate vertical separation minima.
EXAMPLE– *"Traffic twelve o'clock, seven miles, eastbound, MD–80, at one seven thousand."*	***EXAMPLE–*** *"Traffic twelve o'clock, seven miles, eastbound, **Gulfstream 650,** one seven thousand."*
"United Sixteen and American Twenty–five, traffic twelve o'clock, one zero miles, opposite direction, eastbound seven twenty seven at flight level three three zero, westbound MD–Eighty at flight level three one zero."	*"United Sixteen and American Twenty–**F**ive, traffic twelve o'clock, one zero miles, opposite direction, eastbound **S**even **Thirty–S**even at flight level three three zero, westbound **Airbus Three Twenty** at flight level three **two** zero."*
Add	***REFERENCE–*** ***FAA Order JO 7110.65, Para 2–4–21, Description of Aircraft Types.***
c. When both aircraft in subparagraph b are in RVSM airspace, and vertically separated by 1,000 feet, if either pilot reports they are unable to maintain RVSM due to turbulence or mountain wave, vector either aircraft to avoid merging with the target of the other aircraft.	**c.** When both aircraft in subparagraph b are in RVSM airspace and vertically separated by 1,000 feet, **and** either pilot reports they are unable to maintain RVSM due to turbulence or mountain wave, **use** vector**s** to **prevent** the target**s from merging**.

EXAMPLE– *"Delta One Twenty Three, fly heading two niner zero, vector for traffic. Traffic twelve o'clock, one zero miles, opposite direction, MD–80 eastbound at flight level three two zero."*	***EXAMPLE–*** *"Delta One Twenty–Three, fly heading two niner zero, vector for traffic. Traffic twelve o'clock, one zero miles, opposite direction,* ***Seven Thirty–Seven,*** *eastbound at flight level three* ***one*** *zero."*
d. If the pilot requests, vector his/her aircraft to avoid merging with the target of previously issued traffic.	**d.** If the pilot requests, vector **their** aircraft to avoid merging **targets** with the previously issued traffic.
NOTE– *Aircraft closure rates are so rapid that when applying merging target procedures, controller issuance of traffic must be commenced in ample time for the pilot to decide if a vector is necessary.*	***NOTE–*** ***Because a****ircraft closure rates* ***can be*** *rapid****, issue traffic with enough*** *time for the pilot to decide if a vector is necessary.*
e. If unable to provide vector service, inform the pilot.	No Change
NOTE– *The phraseology "Unable RVSM due turbulence (or mountain wave)" is only intended for severe turbulence or other weather encounters with altitude deviations of approximately 200 feet or more.*	***NOTE–*** *The phraseology "Unable RVSM due* ***to*** *turbulence (or mountain wave)" is only intended for severe turbulence or other weather encounters with altitude deviations of approximately 200 feet or more.*

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1. PARAGRAPH NUMBER AND TITLE:
5–1–9. RADAR SERVICE TERMINATION
5–9–7. SIMULTANEOUS INDEPENDENT APPROACHES– DUAL & TRIPLE
5–9–9. SIMULTANEOUS OFFSET INSTRUMENT APPROACHES (SOIA)
5–12–4. GLIDEPATH AND COURSE INFORMATION
Chapter 5, Section 13. Use of PAR for Approach Monitoring– Terminal
5–13–1. MONITOR ON PAR EQUIPMENT
5–13–2. MONITOR AVAILABILITY
5–13–3. MONITOR INFORMATION

2. BACKGROUND: The Department of the Navy has identified an obsolete section of the order concerning the Use of Precision Approach Radar (PAR) for approach monitoring. The use of PAR at FAA facilities is no longer an available resource. There may be limited joint use locations that still have PAR, but its use as a monitoring aid is no longer required, as avionics and technology have rendered its need no longer useful.

3. CHANGE:

OLD	**NEW**
5–1–9. RADAR SERVICE TERMINATION	**5–1–9. RADAR SERVICE TERMINATION**
Title through **a** ***PHRASEOLOGY***	No Change
b. Radar service is automatically terminated and the aircraft needs not be advised of termination when:	No Change

NOTE– **1.** *Termination of radar monitoring when conducting simultaneous ILS approaches is prescribed in paragraph 5–9–7, Simultaneous Independent Approaches– Dual & Triple.* **2.** *Termination of radar monitoring where PAR equipment is used to monitor approaches is prescribed in paragraph 5–13–3, Monitor Information.*	***NOTE–*** *Termination of radar monitoring when conducting simultaneous ILS approaches is prescribed in paragraph 5–9–7, Simultaneous Independent Approaches– Dual & Triple.* Delete

OLD	NEW
5–9–7. SIMULTANEOUS INDEPENDENT APPROACHES– DUAL & TRIPLE	**5–9–7. SIMULTANEOUS INDEPENDENT APPROACHES– DUAL & TRIPLE**
Title through **e5**	No Change
6. Do not apply the provisions of paragraph 5–13–1, Monitor on PAR Equipment, for simultaneous independent approaches.	Delete

OLD	NEW
5–9–9. SIMULTANEOUS OFFSET INSTRUMENT APPROACHES (SOIA)	**5–9–9. SIMULTANEOUS OFFSET INSTRUMENT APPROACHES (SOIA)**
Title through **c5**	No Change
6. Do not apply the provisions of paragraph 5–13–1, Monitor on PAR Equipment, for simultaneous approaches.	Delete

OLD	NEW
5–12–4. GLIDEPATH AND COURSE INFORMATION	**5–12–4. GLIDEPATH AND COURSE INFORMATION**
Title through **a *PHRASEOLOGY***	No Change
b. Issue trend information as required, to indicate target position with respect to the azimuth and elevation cursors and to describe target movement as appropriate corrections are issued. Trend information may be modified by the terms “RAPIDLY” or “SLOWLY,” as appropriate.	No Change
EXAMPLE– *“Going above/below glidepath.”* *“Going right/left of course.”* *“Above/below glidepath and coming down/up.”* *“Above/below glidepath and holding.”* *“Left/right of course and holding/correcting.”*	No Change
REFERENCE– *FAA Order JO 7110.65, Para 5–12–7, Position Advisories.* *FAA Order JO 7110.65, Para 5–13–3, Monitor Information.*	***REFERENCE–*** *FAA Order JO 7110.65, Para 5–12–7, Position Advisories.*

OLD	NEW
Section 13. Use of PAR for Approach Monitoring– Terminal	Delete

OLD	NEW
5–13–1. MONITOR ON PAR EQUIPMENT	Delete
USAF not applicable. Aircraft conducting precision or nonprecision approaches must be monitored by PAR equipment if the PAR final approach course coincides with the NAVAID final approach course from the final approach fix to the runway and one of the following conditions exists:	Delete
NOTE– **1.** *The provisions of this section do not apply to monitoring simultaneous approaches.*	Delete
2. *This procedure is used in PAR facilities operated by the FAA and other military services at joint–use civil/military locations and military installations during the operational hours of the PAR.*	Delete
a. The reported weather is below basic VFR minima.	Delete
b. ***USA Not applicable.*** At night.	Delete
c. Upon request of the pilot.	Delete
REFERENCE– *FAA Order JO 7110.65, Para 5–9–7, Simultaneous Independent Approaches– Dual & Triple.*	Delete

OLD	NEW
5–13–2. MONITOR AVAILABILITY	Delete
a. Inform the aircraft of the frequency on which monitoring information will be transmitted if it will not be the same as the communication frequency used for the approach.	Delete
PHRASEOLOGY– *RADAR MONITORING ON LOCALIZER VOICE (frequency),* *and if applicable,* *CONTACT (terminal control function) (frequency, if required) AFTER LANDING.*	Delete
b. If the approach is not monitored, inform the aircraft that radar monitoring is not available.	Delete
PHRASEOLOGY– *RADAR MONITORING NOT AVAILABLE.*	Delete
c. If conditions prevent continued monitor after the aircraft is on final approach, advise the pilot. State the reason and issue alternate procedures as appropriate.	Delete
PHRASEOLOGY– *(Reason), RADAR MONITORING NOT AVAILABLE, (alternative instructions).*	Delete

NOTE– *Approach monitoring is a vital service, but during the approach, the controller acts primarily as a safety observer and does not actually guide the aircraft. Loss of the radar monitoring capability (and thus availability) is no reason to terminate an otherwise good instrument approach. Advise the pilot that radar contact has been lost (or other reason as appropriate), that radar monitoring is not available, and of actions for the pilot to take in either proceeding with or breaking off the approach; i.e., contact tower, remain on PAR frequency, etc.*	Delete
OLD	**NEW**
5–13–3. MONITOR INFORMATION	Delete
When approaches are monitored, take the following action:	Delete
a. Advise the pilot executing a nonprecision approach that glidepath advisories are not provided. Do this prior to the pilot beginning the final descent.	Delete
PHRASEOLOGY– *GLIDEPATH ADVISORIES WILL NOT BE PROVIDED.*	Delete
b. Inform the aircraft when passing the final approach fix (nonprecision approaches) or when passing the outer marker or the fix used in lieu of the outer marker (precision approaches).	Delete
PHRASEOLOGY– *PASSING (FIX).*	Delete
c. Advise the pilot of glidepath trend information (precision approaches) and course trend information to indicate target position and movement with respect to the elevation or azimuth cursor when the aircraft target corresponds to a position of well above/below the glidepath or well left/right of course and whenever the aircraft exceeds the radar safety limits. Repeat if no correction is observed.	Delete
EXAMPLE– *Course trend information: "(Ident), well right/left of P–A–R course, drifting further right/left."* *Glidepath trend information: "(Ident), well above/below P–A–R glidepath."*	Delete
REFERENCE– *FAA Order JO 7110.65, Para 5–12–4, Glidepath and Course Information.*	Delete

d. If, after repeated advisories, the aircraft is observed proceeding outside the safety limits or a radical target deviation is observed, advise the aircraft if unable to proceed visually, to execute a missed approach. Issue a specific altitude and heading if a procedure other than the published missed approach is to be executed.	Delete
PHRASEOLOGY– *(Position with respect to course or glidepath). IF NOT VISUAL, ADVISE YOU EXECUTE MISSED APPROACH (alternative instructions).*	Delete
e. Provide monitor information until the aircraft is over the landing threshold or commences a circling approach.	Delete
Section 14 and **Section 15**	Renumber **Section 13** and **Section 14**

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1. PARAGRAPH NUMBER AND TITLE:
5−2−22. INOPERATIVE OR MALFUNCTIONING ADS−B TRANSMITTER

2. BACKGROUND: In developing a new paragraph in FAA Order JO 7210.3, Reporting Inoperative or Malfunctioning ADS−B Transmitters, commenters from the Department of Defense (DoD) noted that some DoD aircraft that are not equipped with Automatic Dependent Surveillance−Broadcast (ADS−B) are being informed by ATC that their ADS−B appears inoperative. The ADS−B Focus Team within FAA Flight Standards also expressed concern that issues not related to equipment anomalies, such as pilot or controller−generated Call Sign Mis−Match (CSMM) events, would generate a high volume of unnecessary reports.

3. CHANGE:

OLD	**NEW**
5−2−22. INOPERATIVE OR MALFUNCTIONING ADS−B TRANSMITTER	**5−2−22. INOPERATIVE OR MALFUNCTIONING ADS−B TRANSMITTER**
a. Except as provided in paragraph 5−2−24, inform an aircraft when the ADS−B transmitter appears to be inoperative or malfunctioning. Notify the OS/CIC of the aircraft call sign and location of aircraft.	**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.*	No Change
Add	***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.	No Change
PHRASEOLOGY− *STOP ADS−B TRANSMISSIONS, AND IF ABLE, SQUAWK THREE/ALFA (code).*	No Change
NOTE− *Not all aircraft have a capability to disengage the ADS−B transmitter independently from the beacon code squawk.*	No Change
Add	***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.***

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1. PARAGRAPH NUMBER AND TITLE: 7−4−3. CLEARANCE FOR VISUAL APPROACH

2. BACKGROUND: Recent discussions concerning RNAV Visual Flight Procedures (RVFP), brought to light the historical practice of issuing a visual approach clearance that includes the landing runway at locations with an operating control tower and not issuing a runway in conjunction with a visual approach clearance to non−towered airports was not specifically addressed in the order. In August 1983, guidance for towered and non−towered airports for vectoring to a visual approach was incorporated in the form of examples. There was no explicit guidance for approach clearances. The examples were removed in August 1990 when the entire chapter and section was reorganized.

3. CHANGE:

OLD	**NEW**
7−4−3. CLEARANCE FOR VISUAL APPROACH	**7−4−3. CLEARANCE FOR VISUAL APPROACH**
Title through **a2**	No Change
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.	No Change

PHRASEOLOGY–	Delete
(Call sign) (control instructions as required) *CLEARED VISUAL APPROACH RUNWAY number);* *or* *(Call sign) (control instructions as required)* *CLEARED VISUAL APPROACH TO (airport name)* *(and if appropriate)* *WEATHER NOT AVAILABLE* *or* *VERIFY THAT YOU HAVE THE (airport) WEATHER.*	
REFERENCE– *FAA Order JO 7110.65, Para 7−2−1, Visual Separation.*	No Change
c through **c1**	No Change
2. At locations with an operating control tower, the aircraft is to follow a preceding aircraft and the pilot reports the preceding aircraft in sight and is instructed to follow it, or	**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.*	No Change
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.	No Change
Add	**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.**

Add	***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.*	No Change

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1. PARAGRAPH NUMBER AND TITLE: 10–2–6. HIJACKED AIRCRAFT

2. BACKGROUND: Hijack attempts or actual events are a matter of national security and require special handling. For national security reasons the Air Traffic Organization (ATO) relocated operational guidance for air traffic controllers to follow for an actual or suspected hijacking from FAA Order JO 7110.65, Air Traffic Control, in 2007, and consolidated the procedures for hijack situations in FAA Order JO 7610.4, Special Operations.

3. CHANGE:

OLD	**NEW**
10–2–6. HIJACKED AIRCRAFT	**10–2–6. HIJACKED AIRCRAFT**
Hijack attempts or actual events are a matter of national security and require special handling. Policy and procedures for hijack situations are detailed in FAA Order JO 7610.4, Special Operations. FAA Order JO 7610.4 describes reporting requirements, air crew procedures, air traffic procedures and escort or interceptor procedures for hijack situations.	Hijack attempts or actual events are a matter of national security and require special handling. FAA Order JO 7610.4, Special Operations**,** describes **additional procedures and** reporting requirements **that must be followed.**
REFERENCE– *FAA Order JO 7610.4, Chapter 7, Procedures for Handling Suspicious Flight Situations and Hijacked Aircraft.* *FAA Order JO 7110.65, Para 5–2–11 , Code Monitor.*	No Change
Add	**a. When a pilot notifies ATC verbally of a hijacking situation, assign code 7500 to the subject aircraft.**
Add	***PHRASEOLOGY–*** ***(Identification) SQUAWK SEVEN FIVE ZERO ZERO.***

Add	**1. Should the pilot acknowledge assignment of code 7500 without further communication, or fail to acknowledge or communicate further, assume that the flight is being subject to hijack.**
Add	**2. No reference to the hijacking must be made in subsequent communications unless initiated by the pilot, or unless directed by the Domestic Events Network (DEN) Air Traffic Security Coordinator.**
Add	**3. Immediately inform the operations manager, supervisor or CIC.**
Add	***NOTE–*** ***When an aircraft squawks code 7500, ERAM will display "HIJK," and STARS/MEARTS will display "HJ" in the data block.***
Add	**b. When a pilot notifies ATC of a hijacking situation by squawking code 7500, use the following phraseology to verify that the aircrew intentionally selected code 7500.**
Add	***PHRASEOLOGY–*** ***(Identification)(name of facility) VERIFY SQUAWKING SEVEN FIVE ZERO ZERO.***
Add	**1. Should the pilot fail to acknowledge or communicate further, assume that the flight is being subject to hijack.**
Add	**2. No reference to the hijacking must be made in subsequent communications unless initiated by the pilot, or unless directed by the DEN Air Traffic Security Coordinator.**
Add	**3. Immediately inform the operations manager, supervisor or CIC.**

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1. PARAGRAPH NUMBER AND TITLE:
10–5–2. DEBRIS–GENERATING SPACE LAUNCH OR REENTRY VEHICLE MISHAPS

2. BACKGROUND: The Acceptable Level of Risk (ALR) Review Team Subgroup on Contingency Procedures was tasked with developing ATC procedures for a contingency response to a space vehicle mishap.

3. CHANGE:

OLD	NEW
Add	**10–5–2. DEBRIS–GENERATING SPACE LAUNCH OR REENTRY VEHICLE MISHAPS**
Add	**A debris–generating space launch or reentry vehicle mishap is an emergency situation in the NAS.**

Add **a. In the event of a debris−generating space launch or reentry vehicle mishap, issue an alert broadcast to all affected aircraft informing them of the mishap, and, if known, the approximate location of the debris fall area. If a debris response area (DRA) has been activated, issue the approximate location of the response area instead.**

Add ***EXAMPLE−***
"Attention all aircraft, due to a space vehicle mishap, possible debris falling in the NAS from approximately Brownsville, Texas, extending east for approximately five hundred miles. Stand by for individual instructions."

"Attention all aircraft, due to a space vehicle mishap, a debris response area has been activated beginning at approximately Cape Canaveral, extending northeast for approximately three hundred miles. Stand by for individual instructions."

Add **1. When workload permits, reissue the alert broadcast approximately every 15 minutes.**

Add **2. When advised that falling debris is no longer a factor, or the DRA has been deactivated, issue a broadcast to advise all aircraft of this information.**

Add ***EXAMPLE−***
"Attention all aircraft, falling debris no longer a factor."

"Attention all aircraft, the debris response area is no longer active."

Add **b. In the event of a debris response area activation:**

Add **1. Issue instructions and/or clearances to prevent aircraft from entering the debris response area, unless a higher priority duty already exists.**

Add ***REFERENCE−***
FAA Order JO 7110.65, Para 2−1−2a, Duty Priority.

Add **2. For airborne aircraft already within an activated DRA:**

Add **(a) Assist aircraft to exit the DRA expeditiously;**

Add **(b) Do not withhold landing or approach clearances.**

Add **3. For airports that underlie an active DRA:**

Add **(a) Do not issue departure releases or takeoff clearances;**

Add **(b) To the extent possible do not clear aircraft onto the movement area.**