

CHANGE

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

Air Traffic Organization Policy

**JO 7110.65Y
CHG 3**

Effective Date:
December 31, 2020

SUBJ: Air Traffic Control

- 1. Purpose of This Change.** This change transmits revised pages to Federal Aviation Administration Order JO 7110.65Y, Air Traffic Control, and the Briefing Guide.
- 2. Audience.** This change applies to all Air Traffic Organization (ATO) personnel and anyone using ATO directives.
- 3. Where Can I Find This Change?** This change is available on the FAA Web site at http://faa.gov/air_traffic/publications and https://employees.faa.gov/tools_resources/orders_notices/.
- 4. Explanation of Policy Change.** See the Explanation of Changes attachment which has editorial corrections and changes submitted through normal procedures. The Briefing Guide lists only new or modified material, along with background.
- 5. Distribution.** This change is distributed to selected offices in Washington headquarters, regional offices, service area offices, the William J. Hughes Technical Center, and the Mike Monroney Aeronautical Center. Also, copies are sent to all air traffic field facilities and international aviation field offices; and to interested aviation public.
- 6. Disposition of Transmittal.** Retain this transmittal until superseded by a new basic order.
- 7. Page Control Chart.** See the page control chart attachment.

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Vice President, Mission Support Services
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Explanation of Changes

Change 3

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

a. 2-1-28. TCAS RESOLUTION ADVISORIES

This change incorporates the SRM panel recommendations of adding a note and two references to FAA Order JO 7110.65, paragraph 2-1-28, TCAS Resolution Advisories. The note states that controllers are not prohibited from issuing traffic advisories or safety alerts to aircraft involved in a TCAS RA maneuver. In addition, the added references are to paragraphs 2-1-6 and 2-1-21.

b. 2-4-20. AIRCRAFT IDENTIFICATION 9-2-3. DEPARTMENT OF ENERGY SPECIAL FLIGHTS

This change deletes subparagraph 2-4-20a10(a) and all of paragraph 9-2-3. The Department of Energy (DOE) Aviation Office and other U.S. Government agencies disclosed that R-A-C flights are no longer utilized.

c. 9-2-13. LAW ENFORCEMENT OPERA- TIONS BY CIVIL AND MILITARY ORGANIZATIONS

This change retitles the paragraph and directs controllers to inform the OS/CIC of any information pertaining to stolen aircraft. Obsolete references to law enforcement alerts, EPIC, and the Transportation Security Administration are deleted. This change also deletes the reference to FAA Order

1600.29 and amends the referenced title for FAA Order JO 7110.67.

d. 10-1-1. EMERGENCY DETERMINA- TIONS

10-1-2. OBTAINING INFORMATION

10-2-1. INFORMATION REQUIRE- MENTS

10-2-5. EMERGENCY SITUATIONS

10-2-15. EMERGENCY AIRPORT REC- OMMENDATION

This change allows the Emergency Autoland system to alert the controller of an emergency situation and to relay the intentions of the aircraft. It also adds the Emergency Autoland process as well as clarifies some items pertaining to the handling of emergencies. This change cancels and incorporates N JO 7110.777, which was effective September 10, 2020.

e. Editorial Changes

Editorial changes include updated references and other minor corrections. Also, the Correspondence Mailbox address was updated in paragraph 1-1-8. Due to the renumbering from paragraph 9-2-3 through 9-2-23 in change b, several references were updated.

f. Entire publication

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

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Chapter 1. General

Section 1. Introduction

1-1-1. PURPOSE OF THIS ORDER

This order prescribes air traffic control procedures and phraseology for use by persons providing air traffic control services. Controllers are required to be familiar with the provisions of this order that pertain to their operational responsibilities and to exercise their best judgment if they encounter situations that are not covered by it.

1-1-2. AUDIENCE

This order applies to all ATO personnel and anyone using ATO directives.

1-1-3. WHERE TO FIND THIS ORDER

This order is available on the FAA Web site at http://www.faa.gov/regulations_policies/orders_notices.

1-1-4. WHAT THIS ORDER CANCELS

FAA Order JO 7110.65X, Air Traffic Control, dated October 12, 2017, and all changes to it are canceled.

1-1-5. EXPLANATION OF CHANGES

The significant changes to this order are identified in the Explanation of Changes page(s). It is advisable to retain the page(s) throughout the duration of the basic order.

1-1-6. EFFECTIVE DATES AND SUBMISSIONS FOR CHANGES

a. This order and its changes are scheduled to be published to coincide with AIRAC dates. (See TBL 1-1-1.)

b. The “Cutoff Date for Completion” in the table below refers to the deadline for a proposed change to be fully coordinated and signed. Change initiators must submit their proposed changes well in advance of this cutoff date to meet the publication effective date. The process to review and coordinate changes often takes several months after the change is initially submitted.

TBL 1-1-1
Publication Schedule

Basic or Change	Cutoff Date for Completion	Effective Date of Publication
JO 7110.65Y	2/28/19	8/15/19
Change 1	8/15/19	1/30/20
Change 2	1/30/20	7/16/20
Change 3	7/16/20	12/31/20
JO 7110.65Z	12/31/20	6/17/21

1-1-7. DELIVERY DATES

a. If an FAA facility **has not** received the order/changes at least 30 days before the above effective dates, the facility must notify its service area office distribution officer.

b. If a military facility **has not** received the order/changes at least 30 days before the above effective dates, the facility must notify its appropriate military headquarters. (See TBL 1-1-2.)

TBL 1-1-2
Military Distribution Contacts

Military Headquarters	DSN	Commercial
U.S. Army USAASA	656-4868	(703) 806-4868
U.S. Air Force HQ AFFSA	884-5509	(405) 734-5509
U.S. Navy CNO (N980A)	224-2638	(703) 614-2638

1-1-8. RECOMMENDATIONS FOR PROCEDURAL CHANGES

The office of primary responsibility (OPR) for this order is:

FAA Headquarters, Mission Support Services
Policy (AJV-P)
600 Independence Avenue, SW
Washington, DC 20597

a. Personnel should submit recommended changes in procedures to facility management.

b. Recommendations from other sources should be submitted through appropriate FAA, military, or industry/user channels.

c. Proposed changes must be submitted electronically to 9-AJV-P-HQ-Correspondence@faa.gov. The submission should include a description of the recommended change, and the proposed language to be used in the order.

NOTE–

For details on the submission process as well as additional AJV-P processing responsibilities, please see FAA Order JO 7000.5, Procedures for Submitting Changes to Air Traffic Control Publications.

d. Procedural changes will not be made to this order until the operational system software has been adapted to accomplish the revised procedures.

1-1-9. REQUESTS FOR INTERPRETATIONS OR CLARIFICATIONS TO THIS ORDER

a. Interpretation requests from field air traffic personnel must be submitted as follows:

1. The request must be submitted, in writing, by an Air Traffic Facility/General manager to their Service Area Director.

2. The Service Area Director must review the request and determine if more than one interpretation on the intent of the language can be inferred.

3. If it is determined that an interpretation is required, the Service Area Director must submit the request, in writing, to the Policy Directorate, for a response.

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

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

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

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

NOTE–

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

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

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

REFERENCE–

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

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

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

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

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

entourage include aircraft and entourage of the President, Vice President, or other public figures when designated by the White House.

REFERENCE–

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

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

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

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

REFERENCE–

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

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

f. Provide priority handling to NIGHT WATCH aircraft when NAOC (pronounced NA-YOCK) is indicated in the remarks section of the flight plan or in air/ground communications.

NOTE–

The term “NAOC” will not be a part of the call sign but may be used when the aircraft is airborne to indicate a request for special handling.

REFERENCE–

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

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

REFERENCE–

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

FAA Order JO 7610.4, Para 12–4–1, “FLYNET” Flights, Nuclear Emergency Teams.

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

NOTE–

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

i. Provide priority handling to USAF aircraft engaged in aerial sampling/surveying missions using the call sign “SAMP.”

REFERENCE–

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

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

FAA Order JO 7610.4, Para 12–4–3, Aerial Sampling/Surveying For Nuclear Contamination.

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

NOTE–

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

REFERENCE–

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

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

REFERENCE–

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

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

NOTE–

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

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

REFERENCE–

FAA Order JO 7110.65, Para 9–2–22, Open Skies Treaty Aircraft.

FAA Order JO 7210.3, Para 5–3–5, Open Skies Treaty Aircraft Priority Flights (F and D).

Treaty on Open Skies, Treaty Document, 102–37.

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

NOTE–

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

REFERENCE–

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

n. IFR aircraft must have priority over SVFR aircraft.

REFERENCE–

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

o. Aircraft operating under the North American Route Program (NRP) are not subject to route limiting restrictions (e.g., published preferred IFR routes, letter of agreement requirements, standard operating procedures).

REFERENCE–

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

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

REFERENCE–

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

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

2–1–5. EXPEDITIOUS COMPLIANCE

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

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

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

2–1–6. SAFETY ALERT

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

NOTE–

1. The issuance of a safety alert is a first priority (see Para 2–1–2, Duty Priority) once the controller observes and recognizes a situation of unsafe aircraft proximity to terrain, obstacles, or other aircraft. Conditions, such as workload, traffic volume, the quality/limitations of the

radar system, and the available lead time to react are factors in determining whether it is reasonable for the controller to observe and recognize such situations. While a controller cannot see immediately the development of every situation where a safety alert must be issued, the controller must remain vigilant for such situations and issue a safety alert when the situation is recognized.

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

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

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

PHRASEOLOGY–

LOW ALTITUDE ALERT (call sign),

CHECK YOUR ALTITUDE IMMEDIATELY.

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

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

REFERENCE–

P/CG Term – Final Approach – IFR

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

PHRASEOLOGY–

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

and/or

CLIMB/DESCEND (specific altitude if appropriate) IMMEDIATELY.

EXAMPLE–

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

or

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

REFERENCE—

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

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

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

FAA Order JO 7110.65, Para 5-2-24, Altitude Filters.

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

2-1-7. INFLIGHT EQUIPMENT MALFUNCTIONS

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

NOTE—

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

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

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

2-1-8. MINIMUM FUEL

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

NOTE—

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

remaining usable fuel supply suggests the need for traffic priority to ensure a safe landing, the pilot should declare an emergency and report fuel remaining in minutes.

2-1-9. REPORTING ESSENTIAL FLIGHT INFORMATION

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

NOTE—

FSSs are responsible for classifying and disseminating Notices to Airmen.

REFERENCE—

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

FAA Order JO 7110.65, Para 5-1-6, Service Limitations.

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

USN, See OPNAVINST 3721.30.

2-1-10. NAVAID MALFUNCTIONS

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

1. Request a report from a second aircraft.

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

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

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

5. If continued malfunction is reported after the standby equipment is activated or the standby equipment cannot be activated, inform technical operations personnel and request advice on whether or not the aid should be shut down. In the absence of a second aircraft report, advise the technical operations personnel of the time of the initial aircraft report and the estimated time a second aircraft report could be obtained.

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

1. Record the following minimum information:

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

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

(c) Date/time of occurrence.

2. Request a report from a second aircraft.

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

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

PHRASEOLOGY-

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

EXAMPLE-

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

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

2-1-11. USE OF MARSA

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

NOTE-

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

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

c. DOD must ensure that military pilots requesting special use airspace/ATCAAs have coordinated with

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

REFERENCE-

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

2-1-12. MILITARY PROCEDURES

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

a. ATC facilities operated by that military service.

EXAMPLE-

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

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

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

EXAMPLE-

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

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

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

REFERENCE-

FAA Order JO 7110.65, Para 1-2-5, Annotations.

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

EXAMPLE-

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

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. Possible suspicious aircraft/pilot activity as prescribed in FAA Order JO 7610.4, paragraph 7-3-1.

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 are met:

1. The responding aircraft has returned to its assigned altitude, or
2. A crew member informs you that the TCAS maneuver is completed and you observe that approved separation has been reestablished, or

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

NOTE–

1. AC 120–55, *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 are met:

- 1.** The responding aircraft has returned to its assigned altitude, or
- 2.** A crew member informs you that the TAWS maneuver is completed and you observe that approved separation has been reestablished, or
- 3.** The responding aircraft has executed an alternate clearance and you observe that approved separation has been reestablished.

2-1-31. “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.

a. Within the time limits specified by a letter of agreement or when not covered by a letter of agreement, at least 15 minutes before the aircraft is estimated to enter the receiving facility's area, or at the time of a radar handoff, or coordination for transfer of control:

1. Aircraft identification.
2. Assigned altitude.
3. Departure or coordination fix time.

b. Any cancellation of IFR or EAS generated VFR flight plan.

REFERENCE—

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

2-2-10. TRANSMIT PROPOSED FLIGHT PLAN

EN ROUTE

a. Transmit proposed flight plans which fall within an ARTCC's Proposed Boundary Crossing Time (PBCT) parameter to adjacent ARTCC's via the Computer B network during hours of inter-center computer operation. In addition, when the route of flight of any proposed flight plan exceeds 20 elements external to the originating ARTCC's area, NADIN must be used to forward the data to all affected centers.

b. During nonautomated operation, the proposed flight plans must be sent via NADIN to the other centers involved when any of the following conditions are met:

1. The route of flight external to the originating center's area consists of 10 or more elements and the flight will enter 3 or more other center areas.

NOTE—

An element is defined as either a fix or route as specified in FAA Order JO 7110.10, Flight Services, para 5-3-3, IFR Flight Plan Control Messages.

2. The route of flight beyond the first point of exit from the originating center's area consists of 10 or more elements, which are primarily fixes described in fix-radial-distance or latitude/longitude format, regardless of the number of other center areas entered.

3. The flight plan remarks are too lengthy for interphone transmission.

2-2-11. FORWARDING AMENDED AND UTM DATA

a. Forward any amending data concerning previously forwarded flight plans except that revisions to ETA information in Paragraph 2-2-6, IFR Flight Progress Data, need only be forwarded when the time differs by more than 3 minutes from the estimate given.

PHRASEOLOGY—

(Identification), REVISED (revised information).

EXAMPLE—

"American Two, revised flight level, three three zero."

"United Eight Ten, revised estimate, Front Royal two zero zero five."

"Douglas Five Zero One Romeo, revised altitude, eight thousand."

"U.S. Air Eleven Fifty-one, revised type, heavy Boeing Seven Sixty-seven."

REFERENCE—

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

b. Computer acceptance of an appropriate input message fulfills the requirement for sending amended data. During EAS FDP operations, the amendment data are considered acknowledged on receipt of a computer update message or a computer-generated flight progress strip containing the amended data.

NOTE—

1. The successful utilization of automation equipment requires timely and accurate insertion of changes and/or new data.

2. If a pilot is not issued a computer-generated ADR/ADAR/AAR and if amendment data is not entered into the computer, the next controller will have incorrect route information.

c. Forward any amended control information and record the action on the appropriate flight progress strip. Additionally, when a route or altitude in a previously issued clearance is amended within 30 minutes of an aircraft's proposed departure time, the facility that amended the clearance must coordinate the amendment with the receiving facility via verbal AND automated means to ensure timely passage of the information. If the automated means of coordination are unavailable, then verbal coordination is sufficient.

NOTE—

The term “receiving” facility means the ATC facility that is expected to transmit the amended clearance to the intended aircraft/pilot.

d. EN ROUTE. Effect manual coordination on any interfacility flight plan data that is not passed through automated means.

e. EN ROUTE. When a controller receives a UTM notification to an FDIO only facility, they must effect manual coordination for the flight plan data. In addition, the controller must verify the flight plan data to the receiving facility within three minutes of the transfer of control point estimate.

NOTE—

FDIO only facilities are facilities with FDIO but without STARS.

2-2-12. AIRBORNE MILITARY FLIGHTS

Forward to FSSs the following information received from airborne military aircraft:

a. IFR flight plans and changes from VFR to IFR flight plans.

b. Changes to an IFR flight plan as follows:

1. Change in destination:

(a) Aircraft identification and type.

(b) Departure point.

(c) Original destination.

(d) Position and time.

(e) New destination.

(f) ETA.

(g) Remarks including change in fuel exhaustion time.

(h) Revised ETA.

2. Change in fuel exhaustion time.

NOTE—

This makes current information available to FSSs for relay to military bases concerned and for use by centers in the event of two-way radio communications failure.

2-2-13. FORWARDING FLIGHT PLAN DATA BETWEEN U.S. ARTCCs AND CANADIAN ACCs**EN ROUTE**

a. Domestic. (Continental U.S./Canadian airspace except Alaska) Proposed departure flight plans and en route estimates will be handled on a 30 minute lead time (or as bilaterally agreed) between any ACC and ARTCC.

b. International. Any route changes (except SIDs) must be forwarded to the appropriate Oceanic/Pre-oceanic ACC or ARTCC with an optimum lead time of 30 minutes or as soon as this information becomes available.

c. Initially, if a flight goes from U.S. airspace into Canadian airspace and returns to U.S. airspace, the ACC will be responsible for forwarding the flight plan data to the appropriate ARTCC by voice transmission except for flights which traverse mutually agreed on airways/fixes. These airways/fixes will be determined on a case-by-case basis and will be based on time and distance considerations at the service area office.

2-2-14. TELETYPE FLIGHT DATA FORMAT— U.S. ARTCCs – CANADIAN ACCs**EN ROUTE**

The exchange of flight plan data between Canadian ACCs and U.S. ARTCCs must be made as follows:

a. The U.S. ARTCCs will transmit flight data to the Canadian ACCs in one of the following formats:

1. NADIN II input format as described in the NAS Management Directives (MDs) for:

(a) Flight Plan Messages:

(1) Active.

(2) Proposed.

(b) Amendment messages.

(c) Cancellation messages.

(d) Response Messages to Canadian Input:

(1) Acknowledgment messages.

(2) Error messages.

(3) Rejection messages.

EXAMPLE–

“Wind zero three zero at two five.”

“Wind two seven zero at one five gusts three five.”

h. Heading. The word “heading” followed by the three separate digits of the number of degrees, omitting the word “degrees.” Use heading 360 degrees to indicate a north heading.

EXAMPLE–

Heading	Statement
5 degrees	“Heading zero zero five.”
30 degrees	“Heading zero three zero.”
360 degrees	“Heading three six zero.”

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

EXAMPLE–

Code	Statement
1000	“One zero zero zero.”
2100	“Two one zero zero.”

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

EXAMPLE–

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

k. Frequencies.

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

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

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

EXAMPLE–

Frequency	Statement
126.55 MHz	“One two six point five five.”
369.0 MHz	“Three six niner point zero.”

121.5 MHz	“One two one point five.”
135.275 MHz	“One three five point two seven.”
302 kHz	“Three zero two kiloHertz.”

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

EXAMPLE–

Frequency	Statement
275.8 MHz	“Local channel one six.”

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

l. Speeds.

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

EXAMPLE–

Speed	Statement
250	“Two five zero knots.”
190	“One niner zero knots.”

2. The separate digits of the Mach number preceded by “Mach.”

EXAMPLE–

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

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

EXAMPLE–

“Three zero mile arc east of Nottingham.”

“Traffic, one o’clock, two five miles, northbound, D–C Eight, flight level two seven zero.”

2–4–18. NUMBER CLARIFICATION

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

EXAMPLE–

“One Seven Thousand, Seventeen Thousand.”

“Altimeter Two Niner Niner Two, Twenty Nine Ninety Two.”

“One Two Six Point Five Five, One Twenty Six Point Fifty Five.”

2–4–19. FACILITY IDENTIFICATION

Identify facilities as follows:

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

EXAMPLE–

“Columbus Tower.”

“Barksdale Tower.”

“Navy Jacksonville Tower.”

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

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

EXAMPLE–

“Denver Approach.”

“Griffiss Approach.”

“Navy Jacksonville Approach.”

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

EXAMPLE–

“Boston Departure.”

“LaGuardia Clearance Delivery.”

“O’Hare Ground.”

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

EXAMPLE–

“Bradford High, Handoff.”

f. Flight service stations. State the name of the station followed by the word “radio.”

EXAMPLE–

“Leesburg Radio.”

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

EXAMPLE–

“Corpus Christi G–C–A.”

“Davison G–C–A.”

2–4–20. AIRCRAFT IDENTIFICATION

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

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

REFERENCE–

FAA Order JO 7110.65, Para 2–4–8, Radio Message Format.

FAA Order JO 7110.65, Para 2–4–9, Abbreviated Transmissions.

FAA Order JO 7110.65, Para 2–4–15, Emphasis for Clarity.

FAA Order JO 7110.65, Para 2–4–17, Numbers Usage.

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

EXAMPLE–

Air traffic controller’s initiated call:

“November One Two Three Four Golf.”

“November One Two Three Four.”

Responding to pilot’s initial or subsequent call:

“Jet Commander One Two Three Four Papa.”

“Bonanza One Two Three Four Tango.”

“Sikorsky Six Three Eight Mike Foxtrot.”

NOTE–

If aircraft identification becomes a problem when the procedures specified above are used, see paragraph 2–4–15, Emphasis for Clarity.

2. Aircraft having an ICAO 3LD and other FAA authorized call sign (U.S. special or local). State the call sign followed by the flight number in group form.

NOTE–

“Group form” is the pronunciation of a series of numbers as the whole number, or pairs of numbers they represent rather than pronouncing each separate digit. The use of

group form may, however, be negated by four-digit identifiers or the placement of zeros in the identifier.

EXAMPLE–

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

NOTE–

For clarity, aircraft having an ICAO 3LD and other FAA authorized call sign may be pronounced using single digits if necessary.

EXAMPLE–

“United Five One Seven.”
 “United Five Seven Zero.”

NOTE–

For procedures that address similar sounding call signs, see paragraph 2–4–15, *Emphasis for Clarity*.

REFERENCE–

FAA Order JO 7610.12, *Assignment and Authorization of Call Sign Designators and Associated Telephonies*.

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

EXAMPLE–

“Tango Mooney Five Five Five Two Quebec.”
 “Tango November One Two Three Four.”

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

EXAMPLE–

“MEDEVAC Delta Fifty-One.”

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

EXAMPLE–

“MEDEVAC Two Six Four Six.”

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

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

EXAMPLE–

“Navy Five Six Seven One Three.”
 “Coast Guard Six One Three Two Seven.”

“Air Guard One Three Five Eight Six.”
 “Army Copter Three Two One Seven Six.”

NOTE–

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

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

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

EXAMPLE–

“Air Evac One Seven Six Five Two.”

(d) Rescue flights. (Service name) “RESCUE.”

EXAMPLE–

“Air Force Rescue Six One Five Seven Niner.”

(e) Air Mobility Command. “REACH.”

EXAMPLE–

“Reach Seven Eight Five Six Two.”

(f) Special Air Mission. “SAM.”

EXAMPLE–

“Sam Niner One Five Six Two.”

(g) USAF Contract Aircraft “LOGAIR.”

EXAMPLE–

“Logair Seven Five Eight Two Six.”

(h) Military tactical and training:

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

EXAMPLE–

“Paul Two Zero.”
 “Pat One Five Seven.”
 “Gaydog Four.”

NOTE–

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

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

EXAMPLE–

“Navy Golf Alfa Two One.”

“Marine Four Charlie Two Three Six.”

7. Presidential aircraft and Presidential family aircraft:

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

EXAMPLE–

“Air Force One.”

“Army One.”

“Marine One.”

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

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

REFERENCE–

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

8. Vice Presidential aircraft:

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

EXAMPLE–

“Air Force Two.”

“Army Two.”

“Marine Two.”

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

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

REFERENCE–

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

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

TBL 2–4–2

**DOT and FAA Alphanumeric Identifiers
and Call Signs**

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

10. Other Special Flights.

(a) Flight Inspection of navigational aids. State the call sign “FLIGHT CHECK” followed by the digits of the registration number.

EXAMPLE–

“Flight Check Three Niner Six Five Four.”

(b) USAF aircraft engaged in aerial sampling/surveying missions. State the call sign “SAMP” followed by the last three digits of the serial number.

EXAMPLE–

“SAMP Three One Six.”

REFERENCE–

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

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

b. Foreign registry. State one of the following:

1. Civil. State the aircraft type or the manufacturer’s name followed by the letters/numbers of the full aircraft registration, or state the letters or digits of the full aircraft registration. Do not abbreviate.

EXAMPLE–

“Citation C–G–L–R–B.”

“C–G–L–R–B.”

NOTE–

1. Letters may be spoken individually or phonetically.

2. Some foreign civil aircraft registrations begin with a number.

REFERENCE–

FAA Order JO 7110.65, Para 2–4–9, Abbreviated Transmissions.

2. ICAO 3LD. State the associated telephony followed by the flight number in group form, or separate digits may be used if that is the format used by the pilot. Do not abbreviate.

EXAMPLE–

“Scandinavian Sixty–eight.”

“Scandinavian Six Eight.”

3. Foreign Military. Except for military services identified in FAA Order JO 7340.2, Contractions,

state the name of the country and the military service followed by the separate digits or letters of the registration or call sign. For military services listed in FAA Order JO 7340.2, state the approved telephony followed by the separate digits of the flight number.

EXAMPLE–

“Canforce Five Six Two Seven.”

“Brazilian Air Force Five Three Two Seven.”

2-4-21. DESCRIPTION OF AIRCRAFT TYPES

Except for super and heavy aircraft, describe aircraft as follows when issuing traffic information.

a. Military:

1. Military designator, with numbers spoken in group form, or
2. Service and type, or
3. Type only if no confusion or misidentification is likely.

b. Air Carrier:

1. Manufacturer’s model or type designator.
2. Add the manufacturer’s name, company name or other identifying features when confusion or misidentification is likely.

EXAMPLE–

“L-Ten-Eleven.”

“American MD-Eighty. Seven Thirty-Seven.”

“Boeing Seven Fifty-Seven.”

NOTE–

Pilots of “interchange” aircraft are expected to inform the tower on the first radio contact the name of the operating company and trip number followed by the company name, as displayed on the aircraft, and the aircraft type.

c. General Aviation and Air Taxi:

1. Manufacturer’s model or type designator.
2. Manufacturer’s name, or add color when considered advantageous.

EXAMPLE–

“Tri-Pacer.”

“P A Twenty-Two.”

“Cessna Four-Oh-One.”

“Blue and white King Air.”

“Airliner.”

“Sikorsky S-Seventy-Six.”

d. When issuing traffic information to aircraft following a super aircraft, specify the word *super* before the manufacturer’s name and model.

e. When issuing traffic information to aircraft following a heavy aircraft, specify the word *heavy* before the manufacturer’s name and model.

EXAMPLE–

“Super A-Three-Eighty” or “Super

A-three-eighty-eight.”

“Heavy C-Seventeen.”

“Heavy Boeing Seven Forty-Seven.”

REFERENCE–

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

2-4-22. AIRSPACE CLASSES

A, B, C, D, E, and G airspace are pronounced in the ICAO phonetics for clarification. The term “Class” may be dropped when referring to airspace in pilot/controller communications.

EXAMPLE–

“Cessna 123 Mike Romeo cleared to enter Bravo airspace.”

“Sikorsky 123 Tango Sierra cleared to enter New York Bravo airspace.”

Section 6. Weather Information

2-6-1. FAMILIARIZATION

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

NOTE—

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

2-6-2. PIREP SOLICITATION AND DISSEMINATION

Emphasis must be placed on the solicitation and dissemination of Urgent (UUA) and Routine (UA) PIREPs. Timely dissemination of PIREPs alerts pilots to weather conditions and provides information useful to forecasters in the development of aviation forecasts. PIREPs also provide information required by ATC in the provision of safe and efficient use of airspace. This includes reports of strong frontal activity, squall lines, thunderstorms, light to severe icing, wind shear and turbulence (including clear air turbulence) of moderate or greater intensity, braking action, volcanic eruptions and volcanic ash clouds, detection of sulfur gases in the cabin, and other conditions pertinent to flight safety. Controllers must provide the information in sufficient detail to assist pilots in making decisions pertinent to flight safety.

NOTE—

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

REFERENCE—

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

FAA Order JO 7110.65, Para 3-3-4, Braking Action.

P/CG Term— Braking Action.

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

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

FAA Order JO 7210.3, Para 10-3-1, SIGMET and PIREP Handling

FAA Order JO 7110.10, Chapter 8, Section 2, Pilot Weather Report (UA/UUA)

a. Solicit PIREPs when requested, deemed necessary or any of the following conditions exists or is forecast for your area of jurisdiction:

1. Ceilings at or below 5,000 feet. These PIREPs must include cloud bases, tops and cloud coverage when available. Additionally, when providing approach control services, ensure that at least one descent/climb-out PIREP and other related phenomena is obtained each hour.

2. Visibility (surface or aloft) at or less than 5 miles.

3. Thunderstorms and related phenomena.

4. Turbulence of moderate degree or greater.

5. Icing of light degree or greater.

6. Wind shear.

7. Braking action reports.

8. Volcanic ash clouds.

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

NOTE—

1. *The smell of sulfur gases in the cockpit may indicate volcanic activity that has not yet been detected or reported and/or possible entry into an ash-bearing cloud. SO₂ is identifiable as the sharp, acrid odor of a freshly struck match. H₂S has the odor of rotten eggs.*

2. *Pilots may forward PIREPs regarding volcanic activity using the format described in the Volcanic Activity Reporting Form (VAR) as depicted in the AIM, Appendix 2.*

REFERENCE—

FAA Order JO 7110.10, Para 8-2-5, Soliciting PIREPs.

b. Record with the PIREPs:

1. Time.

2. Aircraft position.

3. Type aircraft.

4. Altitude.

5. When the PIREP involves icing include:

(a) Icing type and intensity.

(b) Air temperature in which icing is occurring.

c. Obtain PIREPs directly from the pilot, or if the PIREP has been requested by another facility, you may instruct the pilot to deliver it directly to that facility.

PHRASEOLOGY—

REQUEST/SAY FLIGHT CONDITIONS. Or if appropriate, REQUEST/SAY (specific conditions; i.e., ride, cloud, visibility, etc.) CONDITIONS. If necessary, OVER (fix),

or

ALONG PRESENT ROUTE,

or

BETWEEN (fix) AND (fix).

d. Disseminate PIREPs as follows:

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

NOTE—

Use the word gain and/or loss when describing to pilots the effects of wind shear on airspeed.

EXAMPLE—

“Delta Seven Twenty-one, a Boeing Seven Thirty-seven, previously reported wind shear, loss of two five knots at four hundred feet.”

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

REFERENCE—

■ AIM, Para 7-1-22, Wind Shear PIREPs.

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

REFERENCE—

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

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

(a) The appropriate intrafacility positions.

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

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

(d) Alaska Only: The FSS serving the area in which the report was obtained.

NOTE—

The FSS in Alaska is responsible for long line dissemination.

REFERENCE—

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

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

2-6-3. REPORTING WEATHER CONDITIONS

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

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

2. Forward tower visibility observations to the weather observer.

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

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

REFERENCE—

FAA Order JO 7110.65, Para 3-5-3, Tailwind Components.

FAA Order JO 7110.65, Para 3-10-4, Intersecting

Runway/Intersecting Flight Path Separation.

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

1. When the official weather changes to a condition:

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

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

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

2. When changes which are classified as special weather observations during the time that weather conditions are below 1,000-foot ceiling or the highest circling minimum, whichever is greater, or less than 3 miles visibility.

d. Towers at airports where military turbo-jet en route descents are routinely conducted must also report the conditions to the ARTCC even if it is not the controlling facility.

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

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

REFERENCE–

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

2–6–4. ISSUING WEATHER AND CHAFF AREAS

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

1. Azimuth (by referring to the 12–hour clock) and distance from the aircraft and/or
2. The general width of the area and the area of coverage in terms of fixes or distance and direction from fixes.

NOTE–

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

REFERENCE–

AIM, 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 limits of the lateral deviation area.

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.

NOTE–

The inclusion of the type and number of weather advisory responsible for the hazardous inflight weather advisory is optional.

PHRASEOLOGY–

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

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

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

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

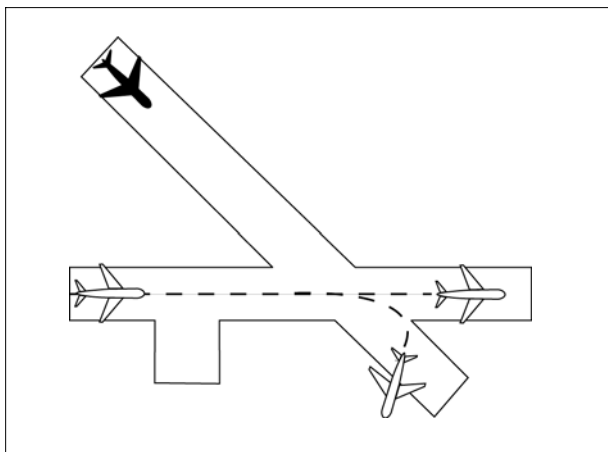
a. Issue traffic information to each aircraft operating on intersecting runways.

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

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

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

FIG 3-9-9
Intersecting Runway Separation

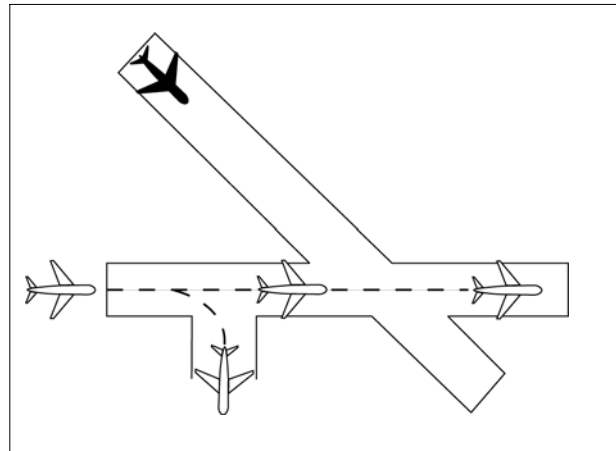


2. A preceding arriving aircraft (See FIG 3-9-10).

- (a) Is clear of the landing runway, or
- (b) Has completed the landing roll on the runway and will hold short of the intersection, or
- (c) Has completed the landing roll and is observed turning at an exit point prior to the intersection, or
- (d) Has passed the intersection.

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

FIG 3-9-10
Intersecting Runway Separation



WAKE TURBULENCE APPLICATION

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

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

- (a) Heavy, large, or small behind super - 3 minutes.
- (b) Heavy, large, or small behind heavy - 2 minutes.
- (c) Small behind B757 - 2 minutes.

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

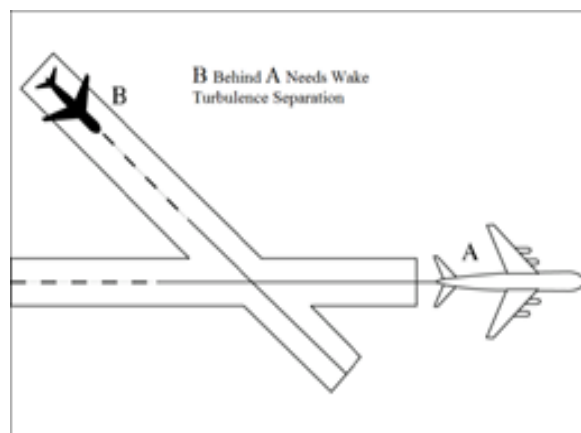
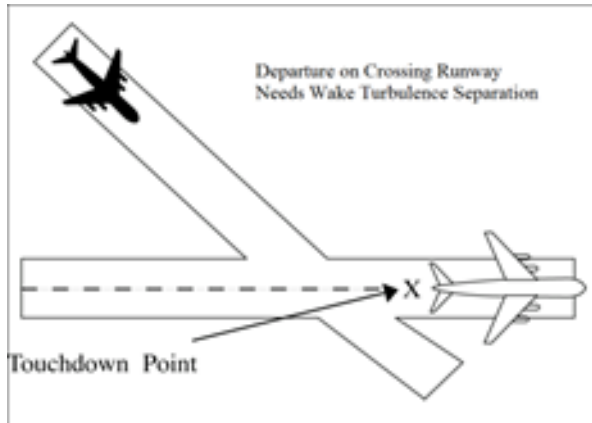


FIG 3-9-12

Departure Behind Arrival on Intersecting Runway

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

REFERENCE—

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

3-9-9. NONINTERSECTING CONVERGING RUNWAY OPERATIONS

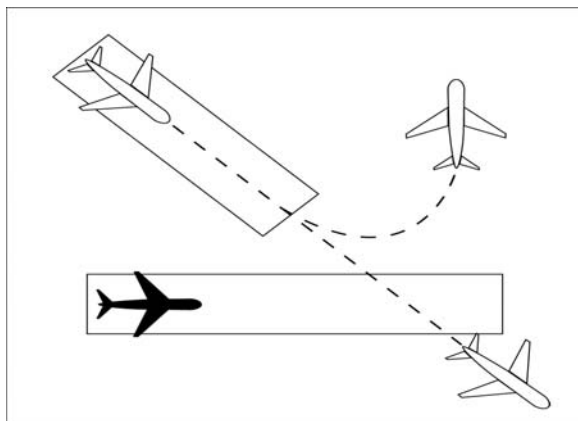
a. Separate departing aircraft from an aircraft using a nonintersecting runway when the flight paths intersect by ensuring that the departure does not begin takeoff roll until one of the following exists:

REFERENCE—

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

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

FIG 3-9-13

Intersecting Runway Separation

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

FIG 3-9-14

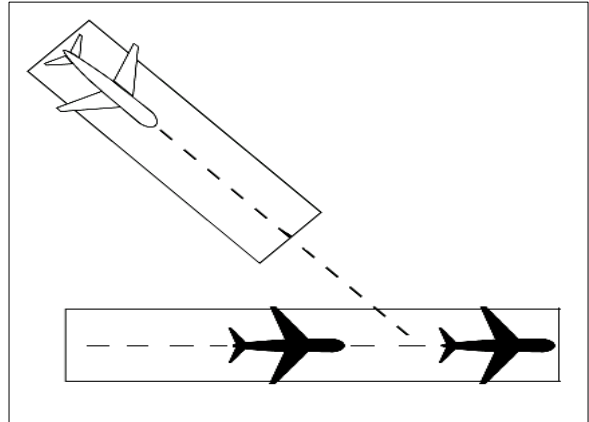
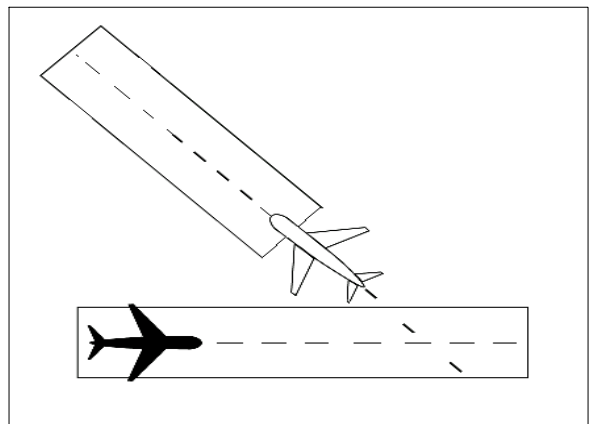
Intersecting Runway Separation

FIG 3-9-15

Intersecting Runway Separation

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

REFERENCE—

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

Necessary,” or “FRC/(fix),” will be added to the remarks. “FRC” or “FRC/(fix)” must always be the first item of intra-center remarks. When “FRC” or “FRC/(fix)” appears on a flight progress strip, the controller issuing the ATC clearance to the aircraft must issue a full route clearance to the specified fix, or, if no fix is specified, for the entire route.

EXAMPLE–

“Cleared to Missoula International Airport, Chief Two Departure to Angley; direct Salina; then as filed; maintain one seven thousand.”

NOTE–

Changes, such as those made to conform with traffic flows and preferred routings, are only permitted to be made by the pilot (or his/her operations office) or the controller responsible for initiating the clearance to the aircraft.

- c. Specify the destination airport in the clearance.
- d. When no changes are required in the filed route, state the phrase: “Cleared to (destination) airport, ([SID name and number] and SID transition, as appropriate); then, as filed.” If a SID is not assigned, follow with “As filed.” If required, add any additional instructions or information, including requested altitude if different than assigned.
- e. Use one of the following when the SID contains published crossing restrictions:

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

NOTE–

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

- f. Instruct aircraft to MAINTAIN (altitude) when:
 - 1. No SID is assigned.
 - 2. A SID does not contain published crossing restrictions and/or is a SID with a Radar Vector segment or is a Radar Vector SID.
 - 3. A SID is constructed with a Radar Vector segment and contains published crossing restrictions after the vector segment.

PHRASEOLOGY–

CLEARED TO (destination) AIRPORT;

and as appropriate,

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

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

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

Or when a SID contains published crossing restrictions,

CLIMB VIA SID.

*CLIMB VIA SID EXCEPT MAINTAIN (altitude);
(additional instructions or information).*

If a SID is not assigned,

*CLEARED TO (destination) AIRPORT AS FILED.
MAINTAIN (altitude);*

and if required,

(additional instructions or information).

EXAMPLE–

“Cleared to Reynolds Airport; David Two Departure, Kingham Transition; then, as filed. Maintain niner thousand. Expect flight level four one zero, one zero minutes after departure.”

“Cleared to Reynolds Airport; David Two Departure, Kingham Transition; then, as filed. Climb via SID.”

“Cleared to Reynolds Airport; David Two Departure, Kingham Transition; then, as filed. Climb via SID except maintain flight level two four zero. Expect flight level four one zero, one zero minutes after departure.”

“Cleared to Reynolds Airport as filed. Maintain niner thousand. Expect flight level four one zero, one zero minutes after departure.”

NOTE–

- 1. SIDs are excluded from “cleared as filed” procedures.
- 2. If a pilot does not wish to accept an ATC clearance to fly a SID, he/she is expected to advise ATC or state “NO SID” in his/her flight plan remarks.

REFERENCE–

P/CG, Climb Via, Top Altitude

g. When a filed route will require revisions, the controller responsible for initiating the clearance to the aircraft must either:

1. Issue a FRC/FRC until a fix.

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

PHRASEOLOGY–

CLEARED TO (destination) AIRPORT.

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

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

Or when the SID contains published crossing restrictions,

CLIMB VIA SID

*CLIMB VIA SID EXCEPT MAINTAIN (altitude).
and if required,*

(additional instructions or information).

If a SID is not assigned,

*CLEARED TO (destination) AIRPORT AS FILED,
EXCEPT CHANGE ROUTE TO READ (amended route
portion). MAINTAIN (altitude);*

and if required,

(additional instructions or information).

EXAMPLE–

“Cleared to Reynolds Airport; South Boston One Departure; then, as filed, except change route to read South Boston Victor Twenty Greensboro. Maintain eight thousand, report leaving four thousand.”

“Cleared to Reynolds Airport; South Boston One Departure; then, as filed, except change route to read South Boston Victor Twenty Greensboro; climb via SID.”

“Cleared to Reynolds Airport; South Boston One Departure; then, as filed, except change route to read South Boston Victor Twenty Greensboro; climb via SID except

maintain flight level one eight zero, expect flight level three one zero one zero minutes after departure.”

“Cleared to Reynolds Airport as filed, except change route to read South Boston Victor Twenty Greensboro. Maintain eight thousand, report leaving four thousand.”

“Cleared to Reynolds Airport via Victor Ninety-one Albany, then as filed. Maintain six thousand.”

h. In a nonradar environment specify one, two, or more fixes, as necessary, to identify the initial route of flight.

1. Specify the destination airport, when practicable, followed by the word “airport” even though it is outside controlled airspace.

PHRASEOLOGY–

CLEARED TO (destination) AIRPORT

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

PHRASEOLOGY–

CLEARED TO (NAVAID name and type)

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

PHRASEOLOGY–

CLEARED TO (intersection or waypoint name and type)

EXAMPLE–

The filed route of flight is from Hutchinson V10 Emporia, thence V10N and V77 to St. Joseph. The clearance will read:

“Cleared to Watson Airport as filed via Emporia, maintain Seven Thousand.”

i. Do not apply these procedures when a pilot requests a detailed clearance or to military operations conducted within ALTRV, stereo routes, operations above FL 600, and other military operations requiring special handling.

NOTE–

Departure clearance procedures and phraseology for military operations within approved altitude reservations, military operations above FL 600, and other military operations requiring special handling are contained in separate procedures in this order or in a LOA, as appropriate.

REFERENCE–

FAA Order JO 7110.65, Para 4–2–7, ALTRV Clearance.

FAA Order JO 7110.65, Para 9–2–14, Military Operations Above FL 600.

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

Aircraft Operating	On course degrees magnetic	Assign	Examples
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 Para 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 Para 2-3-10, Control Symbolology, 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 subparas 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 are 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.

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

NOTE–

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

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

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

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

PHRASEOLOGY–

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

EXAMPLE–

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

NOTE–

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

PHRASEOLOGY–

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

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

EXAMPLE–

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

NOTE–

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

EXAMPLE–

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

NOTE–

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

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

PHRASEOLOGY–

CLIMB VIA SID.

CLIMB VIA SID EXCEPT MAINTAIN (altitude).

EXAMPLE–

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

NOTE–

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

EXAMPLE–

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

NOTE–

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

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

PHRASEOLOGY–

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

EXAMPLE–

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

NOTE–

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

REFERENCE–

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

PHRASEOLOGY–

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

EXAMPLE–

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

NOTE–

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

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

REFERENCE–

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

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

NOTE–

1. 14 CFR Section 91.123 states that a pilot is not allowed to deviate from an ATC clearance “that has been

obtained...unless an amended clearance is obtained” (except when an emergency exists).

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

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

4. “Expedite” is not to be used in lieu of appropriate restrictions to ensure separation.

REFERENCE–

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

4–5–8. ANTICIPATED ALTITUDE CHANGES

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

PHRASEOLOGY–

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

or

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

If required,

AT (time, fix, or altitude).

REFERENCE–

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

4–5–9. ALTITUDE CONFIRMATION–NONRADAR

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

NOTE–

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

1. The pilot states the assigned altitude, or

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

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

and the military authority which originated the high altitude instrument approach procedure.

REFERENCE–

FAA Order JO 7110.65, Para 4–7–5, Military Turbojet En Route Descent.

4–8–5. SPECIFYING ALTITUDE

Specify in the approach clearance the altitude shown in the approach procedures when adherence to that altitude is required for separation. When vertical separation will be provided from other aircraft by pilot adherence to the prescribed maximum, minimum, or mandatory altitudes, the controller may omit specifying the altitude in the approach clearance.

NOTE–

Use FAA or NGA instrument approach procedures charts appropriate for the aircraft executing the approach.

4–8–6. CIRCLING APPROACH

a. Circling approach instructions may only be given for aircraft landing at airports with operational control towers.

b. Include in the approach clearance instructions to circle to the runway in use if landing will be made on a runway other than that aligned with the direction of instrument approach. When the direction of the circling maneuver in relation to the airport/runway is required, state the direction (eight cardinal compass points) and specify a left or right base/downwind leg as appropriate.

PHRASEOLOGY–

CIRCLE TO RUNWAY (number),

or

CIRCLE (direction using eight cardinal compass points) OF THE AIRPORT/RUNWAY FOR A LEFT/RIGHT BASE/DOWNWIND TO RUNWAY (number).

NOTE–

Where standard instrument approach procedures (SIAPs) authorize circling approaches, they provide a basic minimum of 300 feet of obstacle clearance at the MDA within the circling area considered. The dimensions of these areas, expressed in distances from the runways, vary for the different approach categories of aircraft. In some cases a SIAP may otherwise restrict circling approach maneuvers.

c. Do not issue clearances, such as “extend downwind leg,” which might cause an aircraft to

exceed the circling approach area distance from the runways within which required circling approach obstacle clearance is assured.

4–8–7. SIDE-STEP MANEUVER

TERMINAL

Side-step Maneuver. When authorized by an instrument approach procedure, you may clear an aircraft for an approach to one runway and inform the aircraft that landing will be made on a parallel runway.

EXAMPLE–

“Cleared I–L–S Runway seven left approach. Side-step to runway seven right.”

NOTE–

Side-step maneuvers require higher weather minima/MDA. These higher minima/MDA are published on the instrument approach charts.

REFERENCE–

FAA Order JO 7110.65, Para 3–3–2, Closed/Unsafe Runway Information.
P/CG Term– Side-step Maneuver.

4–8–8. COMMUNICATIONS RELEASE

If an IFR aircraft intends to land at an airport not served by a tower or FSS, approve a change to the advisory service frequency when you no longer require direct communications.

PHRASEOLOGY–

CHANGE TO ADVISORY FREQUENCY APPROVED.

NOTE–

An expeditious frequency change permits the aircraft to receive timely local airport traffic information in accordance with AC 90–66, Non-Towered Airport Flight Operations.

4–8–9. MISSED APPROACH

Except in the case of a VFR aircraft practicing an instrument approach, an approach clearance automatically authorizes the aircraft to execute the missed approach procedure depicted for the instrument approach being flown. An alternate missed approach procedure as published on the appropriate FAA Form 8260 or appropriate military form may be assigned when necessary. Once an aircraft commences a missed approach, it may be radar vectored.

NOTE—

1. *Alternate missed approach procedures are published on the appropriate FAA Form 8260 or appropriate military form and require a detailed clearance when they are issued to the pilot.*

2. *In the event of a missed approach involving a turn, unless otherwise cleared, the pilot will proceed to the missed approach point before starting that turn.*

3. *Pilots must advise ATC when intending to apply cold temperature compensation and of the amount of compensation required. Pilots will not apply altitude compensation, unless authorized, when assigned an altitude if provided an initial heading to fly or radar vectors in lieu of published missed approach procedures. Consideration should be given to vectoring aircraft at or above the requested compensating altitude if possible.*

REFERENCE—

FAA Order JO 7110.65, Para 4–8–11, Practice Approaches.

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

FAA Order JO 7110.65, Para 5–8–3, Successive or Simultaneous Departures.

FAA Order 8260.19, Flight Procedures and Airspace, Para 8–6–6

FAA Order 8260.3, United States Standard for Terminal Instrument

Procedures (TERPS), Para 2–8–1 and Chapter 16.

AIM, Paragraph 5-5-5, Missed Approach

4–8–10. APPROACH INFORMATION

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

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

PHRASEOLOGY—

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

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

at night,” or a Snowflake icon indicating mandatory cold temperature compensation.

REFERENCE—

AIM, Paragraph 5-1-17, Cold Temperature Operations

AIM, Paragraph 5-5-4, Instrument Approach

AIM, Paragraph 5-5-5, Missed Approach

4–8–11. PRACTICE APPROACHES

Except for military aircraft operating at military airfields, ensure that neither VFR nor IFR practice approaches disrupt the flow of other arriving and departing IFR or VFR aircraft. Authorize, withdraw authorization, or refuse to authorize practice approaches as traffic conditions require. Normally, approaches in progress should not be terminated.

NOTE—

The priority afforded other aircraft over practice instrument approaches is not intended to be so rigidly applied that it causes grossly inefficient application of services.

a. Separation.

1. IFR aircraft practicing instrument approaches must be afforded approved separation in accordance with Chapter 3, Chapter 4, Chapter 5, Chapter 6, and Chapter 7 minima until:

- (a) The aircraft lands, and the flight is terminated, or
- (b) The pilot cancels the flight plan.

2. Where procedures require application of IFR separation to VFR aircraft practicing instrument approaches, IFR separation in accordance with Chapter 3, Chapter 4, Chapter 5, Chapter 6, and Chapter 7 must be provided. Controller responsibility for separation begins at the point where the approach clearance becomes effective. Except for super or heavy aircraft, 500 feet vertical separation may be applied between VFR aircraft and between a VFR and an IFR aircraft.

REFERENCE—

FAA Order JO 7210.3, Para 6–4–4, Practice Instrument Approaches.

FAA Order JO 7210.3, Para 10–4–5, Practice Instrument Approaches.

3. Where separation services are not provided to VFR aircraft practicing instrument approaches, the controller must;

- (a) Instruct the pilot to maintain VFR.
- (b) Advise the pilot that separation services are not provided.

PHRASEOLOGY—

“(Aircraft identification) MAINTAIN VFR, PRACTICE

Should an additional code be operationally desirable, **Code 2500** must be assigned.

3. Code 4000 when aircraft are operating on a flight plan specifying frequent or rapid changes in assigned altitude in more than one stratum or other conditions of flight not compatible with a stratified code assignment.

NOTE—

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

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

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

NOTE—

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

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

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

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

REFERENCE—

FAA Order JO 7110.65, Para 4-2-8, IFR-VFR and VFR-IFR Flights.
FAA Order JO 7110.65, Para 5-2-3, Nondiscrete Environment.
FAA Order JO 7110.65, Para 5-2-4, Mixed Environment.
FAA Order JO 7110.65, Para 5-2-10, VFR Code Assignments.
FAA Order JO 7110.65, Para 5-3-3, Beacon/ADS-B Identification Methods.

5-2-7. EMERGENCY CODE ASSIGNMENT

Assign codes to emergency aircraft as follows:

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

PHRASEOLOGY—

SQUAWK MAYDAY ON 7700.

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

NOTE—

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

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

PHRASEOLOGY—

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

REFERENCE—

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

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

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

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

5-2-8. RADIO FAILURE

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

NOTE—

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

REFERENCE—

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

5-2-9. UNMANNED AIRCRAFT SYSTEMS (UAS) LOST LINK

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

When you observe a **Code 7400** display, do the following:

- a. Determine the lost link procedure, as outlined in the Special Airworthiness Certificate or Certificate of Waiver or Authorization (COA).
- b. Coordinate, as required, to allow UAS to execute the lost link procedure.
- c. Advise the OS/CIC, when feasible, so the event can be documented.
- d. If you observe or are informed by the PIC that the UAS is deviating from the programmed Lost Link procedure, or is encountering another anomaly, treat the situation in accordance with FAA Order JO 7110.65 Chapter 10, Section 1, Paragraph 10-1-1c.

NOTE-

1. The available lost link procedure should, at a minimum, include lost link route of flight, lost link orbit points, lost link altitudes, communications procedures and preplanned flight termination points if the event recovery of the UAS is deemed unfeasible.
2. Each lost link procedure may differ and is dependent upon airframe and operation. These items are contained in the flight's Certificate of Authorization or Waiver (COA) and must be made available to ATC personnel in their simplest form at positions responsible for Unmanned Aircraft (UAs).
3. Some UA airframes (Global Hawk) will not be programmed upon the NAS Automation roll out to squawk **7400**. These airframes will continue to squawk **7600** should a lost link occur. The ATC Specialist must apply the same procedures described above.

5-2-10. VFR CODE ASSIGNMENTS

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

NOTE-

1. Paragraph 5-2-2, Discrete Environment; Paragraph 5-2-3, Nondiscrete Environment, and Paragraph 5-2-4, Mixed Environment, specify code assignment procedures to follow for the three code environments.
2. Paragraph 5-2-6, Function Code Assignments, specifies the function code allocation from which an appropriate code for the aircraft indicated in subpara a should be selected. In the terminal environment, additional function codes may be authorized by the appropriate service area office.

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

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

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

NOTE-

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

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

PHRASEOLOGY- SQUAWK VFR.

or

SQUAWK 1200.

NOTE-

1. Aircraft not in contact with an ATC facility may squawk **1255** in lieu of **1200** while en route to/from or within the designated firefighting area(s).
2. VFR aircraft which fly authorized SAR missions for the USAF or USCG may be advised to squawk **1277** in lieu of **1200** while en route to/from or within the designated search area.
3. Gliders not in contact with an ATC facility should squawk **1202** in lieu of **1200**. Gliders operate under some flight and maneuvering limitations. They may go from essentially stationary targets while climbing and thermaling to moving targets very quickly. They can be expected to make radical changes in flight direction to find lift and cannot hold altitude in a response to an ATC request.

Gliders may congregate together for short periods of time to climb together in thermals and may cruise together in loose formations while traveling between thermals.

REFERENCE–

■ FAA Order JO 7110.66, National Beacon Code Allocation Plan.

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

REFERENCE–

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

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

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

NOTE–

*The specific allocation of the special use codes in subset **4400** is in FAA Order JO 7110.66, National Beacon Code Allocation Plan (NBCAP).*

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

NOTE–

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

REFERENCE–

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

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

EN ROUTE

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

NOTE–

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

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

REFERENCE–

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

5–2–13. STANDBY OPERATION

You may instruct an aircraft operating on an assigned code to change the transponder/ADS–B to “standby” position:

a. When approximately 15 miles from its destination and you no longer desire operation of the transponder/ADS–B; or

b. When necessary to reduce clutter in a multi–target area, provided you instruct the pilot to return the transponder/ADS–B to “normal” position as soon as possible thereafter.

PHRASEOLOGY–

SQUAWK STANDBY,

or

SQUAWK NORMAL.

REFERENCE–

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

5–2–14. CODE MONITOR

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

REFERENCE–

FAA Order JO 7110.65, Para 5–2–6, Function Code Assignments.

NOTE–

In addition to alphanumeric and control symbology processing enhancements, the MEARTS and STARS systems are equipped with automatic beacon decoders. Therefore, in facilities where the automatic beacon decoders are providing the control slash video, there is no

requirement to have the non-automated decoding equipment operating simultaneously.

REFERENCE–

FAA Order JO 7210.3, Para 3–6–4, Monitoring of Mode 3/A Radar Beacon Codes.

a. This includes the appropriate IFR code actually assigned and, additionally, **Code 1200**, **Code 1202**, **Code 1255**, and **Code 1277** unless your area of responsibility includes only Class A airspace. During periods when ring-around or excessive VFR target presentations derogate the separation of IFR traffic, the monitoring of VFR **Code 1200**, **Code 1202**, **Code 1255**, and **Code 1277** may be temporarily discontinued.

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

REFERENCE–

FAA Order JO 7110.65, Para 5–2–6, Function Code Assignments.

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

NOTE–

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

1. Code 7500 (hijack code).

REFERENCE–

FAA Order JO 7110.65, Para 10–2–6, Hijacked Aircraft.

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

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

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

PHRASEOLOGY–

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

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

PHRASEOLOGY–

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

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

REFERENCE–

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

5–2–16. INOPERATIVE OR MALFUNCTIONING INTERROGATOR

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

PHRASEOLOGY–

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

REFERENCE–

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

5–2–17. FAILED TRANSPONDER OR ADS–B OUT TRANSMITTER

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

REFERENCE–

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

5–2–18. VALIDATION OF MODE C READOUT

Ensure that Mode C altitude readouts are valid after accepting an interfacility handoff, initial track start, track start from coast/suspend tabular list, or during and after an unreliable Mode C readout, except as follows:

NOTE–

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

a. CTRD–equipped tower cabs are not required to validate Mode C altitude readouts after accepting

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 5–2–18, Validation of Mode C Readout.
 FAA Order JO 7110.65, Para 7–7–3, Separation.
 FAA Order JO 7110.65, Para 7–8–3, Separation.
 FAA Order JO 7110.65, Para 7–9–4, Separation.

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

NOTE–

1. Consider known aircraft performance characteristics, pilot furnished and/or Mode C detected information which indicate that climb/descent will not be consistent with the rates recommended in the AIM.

2. It is possible that the separation minima described in Paragraph 4–5–1, Vertical Separation Minima, Paragraph 7–7–3, Separation, Paragraph 7–8–3, Separation, or Paragraph 7–9–4, Separation, might not always be maintained using subpara b. However, correct application of this procedure will ensure that aircraft are safely separated because the first aircraft must have already vacated the altitude prior to the assignment of that altitude to the second aircraft.

REFERENCE–

FAA Order JO 7110.65, Para 2–1–3, Procedural Preference.
 FAA Order JO 7110.65, Para 4–5–1, Vertical Separation Minima.
 FAA Order JO 7110.65, Para 5–2–18, Validation of Mode C Readout.
 FAA Order JO 7110.65, Para 6–6–1, Application.

5–5–6. EXCEPTIONS

a. Do not use Mode C to effect vertical separation with an aircraft on a cruise clearance, contact approach, or as specified in Paragraph 5–15–4, System Requirements, subpara f3.

REFERENCE–

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

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

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

REFERENCE–

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

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

5–5–7. PASSING OR DIVERGING

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

1. Single Site ASR or FUSION Mode

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

NOTE–

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

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

REFERENCE–

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

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

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

NOTE–

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

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

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

REFERENCE–

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

NOTE–

Apply en route separation rules when using multi-sensor mode.

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

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

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

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

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

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

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

EXAMPLE–

“Traffic, twelve o'clock, Boeing Seven Twenty Seven, opposite direction. Do you have it in sight?”

(If the answer is in the affirmative):

“Report passing the traffic.”

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

5–5–8. ADDITIONAL SEPARATION FOR FORMATION FLIGHTS

Because of the distance allowed between formation aircraft and lead aircraft, additional separation is necessary to ensure the periphery of the formation is adequately separated from other aircraft, adjacent airspace, or obstructions. Provide supplemental separation for formation flights as follows:

- a. Separate a standard formation flight by adding 1 mile to the appropriate radar separation minima.

REFERENCE–

FAA Order JO 7110.65, Para 2–1–13, Formation Flights.

FAA Order JO 7110.65, Para 5–5–1, Application.

FAA Order JO 7110.65, Para 7–7–3, Separation.

P/CG Term– Formation Flight.

- b. Separate two standard formation flights from each other by adding 2 miles to the appropriate separation minima.

- c. Separate a nonstandard formation flight by applying the appropriate separation minima to the perimeter of the airspace encompassing the nonstandard formation or from the outermost aircraft of the nonstandard formation whichever applies.

- d. If necessary for separation between a nonstandard formation and other aircraft, assign an appropriate beacon code to each aircraft in the formation or to the first and last aircraft in-trail.

NOTE–

The additional separation provided in Paragraph 5–5–8, Additional Separation for Formation Flights, is not normally added to wake turbulence separation when a formation is following a heavier aircraft since none of the formation aircraft are likely to be closer to the heavier aircraft than the lead aircraft (to which the prescribed wake turbulence separation has been applied).

REFERENCE–

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

5–5–9. SEPARATION FROM OBSTRUCTIONS

- a. **TERMINAL.** Separate aircraft from prominent obstructions depicted on the radar display by the following minima:

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

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

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

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

- 5. **FUSION:**

- (a) Fusion target symbol – 3 miles.

- (b) When ISR is displayed – 5 miles.

NOTE–

When operating in FUSION, distances from the antenna listed in paragraph 5–5–9, a1 through a4, do not apply.

- b. **TERMINAL.** Vertical separation of aircraft above a prominent obstruction depicted on the radar display and contained within a buffer area may be discontinued after the aircraft has passed the obstruction.

- c. **EAS.** Apply the radar separation minima specified in Paragraph 5–5–4, Minima.

5–5–10. ADJACENT AIRSPACE

- a. If coordination between the controllers concerned has not been effected, separate radar-controlled aircraft from the boundary of adjacent airspace in which radar separation is also being used by the following minima:

REFERENCE–

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

- 1. When less than 40 miles from the antenna– 1 1/2 miles.

- 2. When 40 miles or more from the antenna– 2 1/2 miles.

- 3. **EAS:**

- (a) Below Flight Level 600– 2 1/2 miles.

- (b) Flight Level 600 and above– 5 miles.

- b. Separate radar-controlled aircraft from the boundary of airspace in which nonradar separation is being used by the following minima:

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

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

- 3. **EAS:**

- (a) Below Flight Level 600– 5 miles.

- (b) Flight Level 600 and above– 10 miles.

- c. The provisions of subparas a and b do not apply to VFR aircraft being provided Class B, Class C, or TRSA services. Ensure that the targets of these aircraft do not touch the boundary of adjacent airspace.

- d. VFR aircraft approaching Class B, Class C, Class D, or TRSA airspace which is under the control jurisdiction of another air traffic control facility should either be provided with a radar handoff

or be advised that radar service is terminated, given their position in relation to the Class B, Class C, Class D, or TRSA airspace, and the ATC frequency, if known, for the airspace to be entered. These actions should be accomplished in sufficient time for the pilot to obtain the required ATC approval prior to entering the airspace involved, or to avoid the airspace.

5-5-11. EDGE OF SCOPE

Separate a radar-controlled aircraft climbing or descending through the altitude of an aircraft that has been tracked to the edge of the scope/display by the following minima until nonradar separation has been established:

- a. When less than 40 miles from the antenna—*3 miles* from edge of scope.
- b. When 40 miles or more from the antenna—*5 miles* from edge of scope.

c. EAS:

1. Below Flight Level 600— *5 miles*.
2. Flight Level 600 and above— *10 miles*.

5-5-12. BEACON TARGET DISPLACEMENT

When using a radar target display with a previously specified beacon target displacement to separate a beacon target from a primary target, adjacent airspace, obstructions, or terrain, add a 1 mile correction factor to the applicable minima. The maximum allowable beacon target displacement which may be specified by the facility air traffic manager is $\frac{1}{2}$ mile.

REFERENCE—

FAA Order JO 7210.3, Para 3-6-4, *Monitoring of Mode 3/A Radar Beacon Codes*. ■

Section 9. Radar Arrivals

5-9-1. VECTORS TO FINAL APPROACH COURSE

Except as provided in Paragraph 7-4-2, Vectors for Visual Approach, vector arriving aircraft to intercept the final approach course:

a. At least 2 miles outside the approach gate unless one of the following exists:

1. When the reported ceiling is at least 500 feet above the MVA/MIA and the visibility is at least 3 miles (report may be a PIREP if no weather is reported for the airport), aircraft may be vectored to intercept the final approach course closer than 2 miles outside the approach gate but no closer than the approach gate.

2. If specifically requested by the pilot, aircraft may be vectored to intercept the final approach course inside the approach gate but no closer than the final approach fix.

EXCEPTION. Conditions 1 and 2 above do not apply to RNAV aircraft being vectored for a GPS or RNAV approach.

b. Provide a minimum of 1,000 feet vertical separation between aircraft on opposite base legs unless another form of approved separation is established during turn-on to final approach.

c. For a precision approach, at an altitude not above the glideslope/glidepath or below the minimum glideslope intercept altitude specified on the approach procedure chart.

d. For a nonprecision approach, at an altitude which will allow descent in accordance with the published procedure.

NOTE-

A pilot request for an "evaluation approach," or a "coupled approach," or use of a similar term, indicates the pilot desires the application of subparagraphs a and b.

e. **EN ROUTE.** The following provisions are required before an aircraft may be vectored to the final approach course:

1. The approach gate and a line (solid or broken), depicting the final approach course starting at or passing through the approach gate and extending away from the airport, be displayed on the radar

scope; for a precision approach, the line length must extend at least the maximum range of the localizer; for a nonprecision approach, the line length must extend at least 10 NM outside the approach gate; and

2. The maximum range selected on the radar display is 150 NM; or

3. An adjacent radar display is set at 125 NM or less, configured for the approach in use, and is utilized for the vector to the final approach course.

4. If unable to comply with subparagraphs 1, 2, or 3 above, issue the clearance in accordance with Paragraph 4-8-1, Approach Clearance.

REFERENCE-

FAA Order JO 7110.65, Para 4-8-1, Approach Clearance.

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

5-9-2. FINAL APPROACH COURSE INTERCEPTION

a. Assign headings that will permit final approach course interception on a track that does not exceed the interception angles specified in TBL 5-9-1.

TBL 5-9-1

Approach Course Interception Angle

Distance from interception point to approach gate	Maximum interception angle
Less than 2 miles or triple simultaneous approaches in use	20 degrees
2 miles or more	30 degrees (45 degrees for helicopters)

b. If deviations from the final approach course are observed after initial course interception, apply the following:

1. Outside the approach gate: apply procedures in accordance with subpara a, if necessary, vector the aircraft for another approach.

2. Inside the approach gate: inform the pilot of the aircraft's position and ask intentions.

PHRASEOLOGY-

(Ident) (distance) MILE(S) FROM THE AIRPORT, (distance) MILE(S) RIGHT/LEFT OF COURSE, SAY INTENTIONS.

NOTE-

The intent is to provide for a track course intercept angle

judged by the controller to be no greater than specified by this procedure.

REFERENCE–

FAA Order JO 7110.65, Chapter 5, Section 9, Radar Arrivals, and Section 10, Radar Approaches– Terminal.

c. EN ROUTE. When using a radar scope range above 125 NM, the controller must solicit and receive a pilot report that the aircraft is established on the final approach course. If the pilot has not reported established by the final approach gate, inform the pilot of his/her observed position and ask intentions.

NOTE–

It may be difficult to accurately determine small distances when using very large range settings.

5-9-3. VECTORS ACROSS FINAL APPROACH COURSE

Inform the aircraft whenever a vector will take it across the final approach course and state the reason for such action.

NOTE–

In the event you are unable to so inform the aircraft, the pilot is not expected to turn inbound on the final approach course unless approach clearance has been issued.

PHRASEOLOGY–

EXPECT VECTORS ACROSS FINAL FOR (purpose).

EXAMPLE–

“EXPECT VECTORS ACROSS FINAL FOR SPACING.”

REFERENCE–

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

5-9-4. ARRIVAL INSTRUCTIONS

Issue all of the following to an aircraft before it reaches the approach gate:

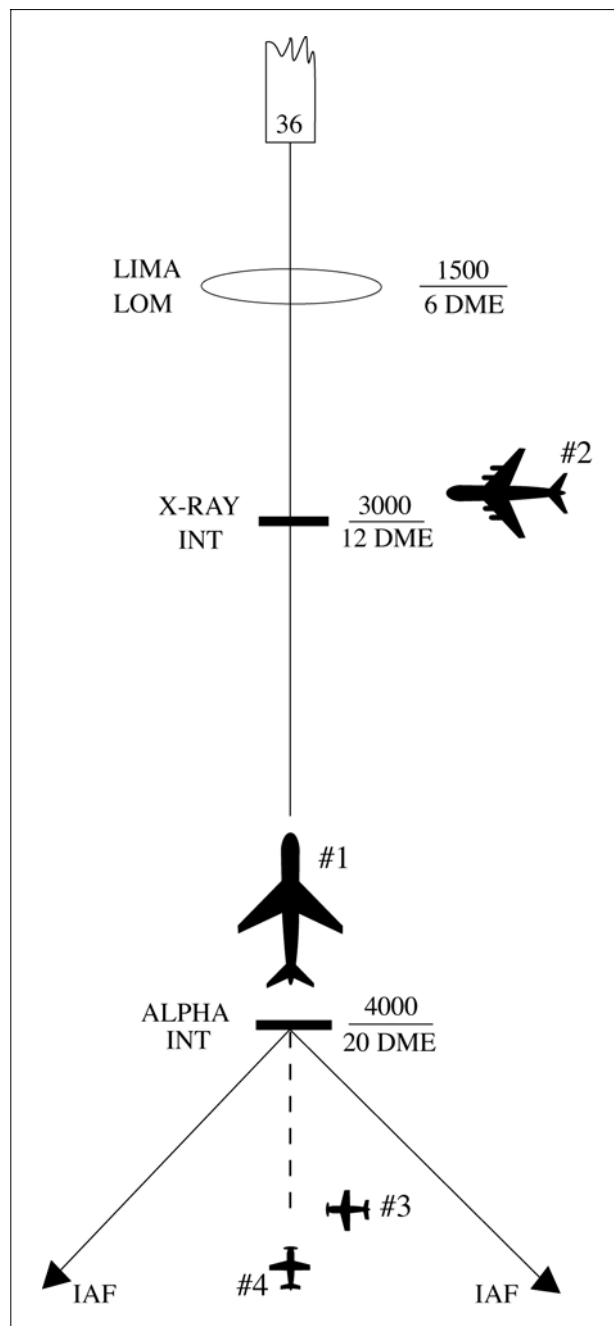
a. Position relative to a fix on the final approach course. If none is portrayed on the radar display or if none is prescribed in the procedure, issue position information relative to the navigation aid which provides final approach guidance or relative to the airport.

b. Vector to intercept the final approach course if required.

c. Approach clearance except when conducting a radar approach. Issue approach clearance only after the aircraft is:

1. Established on a segment of a published route or instrument approach procedure, or see FIG 5-9-1 Example 1.

**FIG 5-9-1
Arrival Instructions**



Chapter 6. Nonradar

Section 1. General

6-1-1. DISTANCE

Use mileage-based (DME and/or ATD) procedures and minima only when direct pilot/controller VHF or UHF voice communications are maintained.

6-1-2. NONRECEIPT OF POSITION REPORT

When a position report affecting separation is not received, take action to obtain the report no later than 5 minutes after the aircraft was estimated over the fix.

REFERENCE-

FAA Order JO 7110.65, Para 9-2-6, IFR Military Training Routes.

6-1-3. DUPLICATE POSITION REPORTS

Do not require an aircraft to make the same position report to more than one facility.

6-1-4. ADJACENT AIRPORT OPERATION

TERMINAL

WAKE TURBULENCE APPLICATION

The ATC facility having control jurisdiction at adjacent airports must separate arriving or departing IFR aircraft on a course that will cross the flight path of an aircraft requiring wake turbulence separation in accordance with the following:

- a. Heavy, large, or small behind super – 3 minutes.
- b. Heavy, large, or small behind heavy – 2 minutes.
- c. Small behind B757 - 2 minutes.

FIG 6-1-1

Adjacent Airport Operation -- Arrival

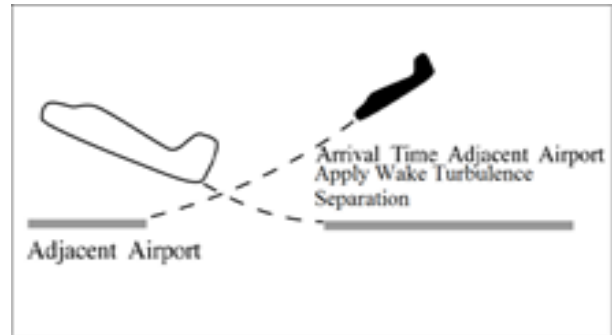
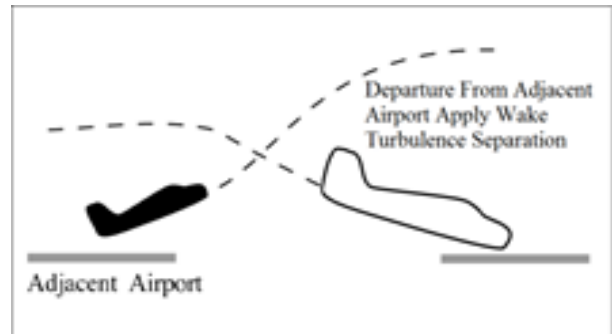


FIG 6-1-2

Adjacent Airport Operation -- Departure



6-1-5. ARRIVAL MINIMA

TERMINAL

WAKE TURBULENCE APPLICATION

a. Separate IFR aircraft landing behind an arriving aircraft to the same runway:

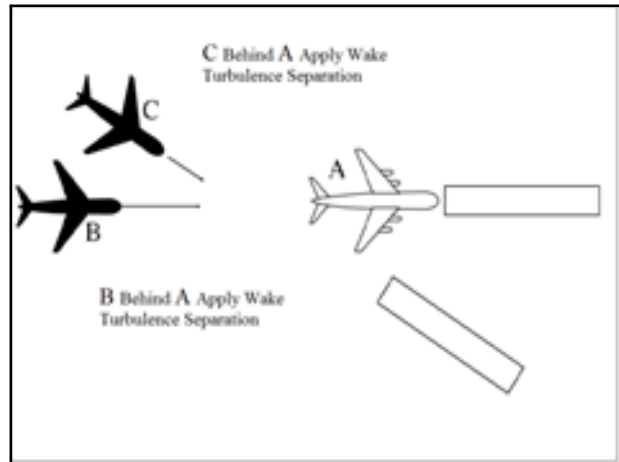
1. Behind super:
 - (a) Heavy or large – 3 minutes.
 - (b) Small – 4 minutes.
2. Behind heavy:
 - (a) Heavy or large – 2 minutes.
 - (b) Small – 3 minutes.
3. Small behind B757 – 3 minutes.

b. Separate IFR aircraft landing behind an arriving aircraft to a parallel runway separated by less than

2,500 feet, or a crossing runway if projected flight paths will cross:

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

FIG 6-1-3
Arrival Minima Landing Behind an Arriving Aircraft Requiring Wake Turbulence Separation



Section 6. Vertical Separation

6-6-1. APPLICATION

Assign an altitude to an aircraft after the aircraft previously at that altitude has reported leaving the altitude.

PHRASEOLOGY–

REPORT LEAVING/REACHING (altitude/flight level).

REPORT LEAVING ODD/EVEN ALTITUDES/FLIGHT LEVELS.

(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.

or

If aircraft's position relative to the lowest useable flight level is unknown),

SAY ALTITUDE OR FLIGHT LEVEL.

NOTE–

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.

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 7-7-3, Separation.

FAA Order JO 7110.65, Para 7-8-3, Separation.

FAA Order JO 7110.65, Para 7-9-4, Separation.

6-6-2. EXCEPTIONS

Assign an altitude to an aircraft only after the aircraft previously at that altitude has reported at or passing through another altitude separated from the first by the appropriate minimum when:

a. Severe turbulence is reported.

b. Aircraft are conducting military aerial refueling.

REFERENCE–

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

c. The aircraft previously at the altitude has been:

1. Issued a clearance permitting climb/descent at pilot's discretion.

2. Cleared to CRUISE (altitude). However, do not use Mode C to effect separation with an aircraft on a cruise clearance.

NOTE–

An aircraft assigned a cruise clearance is assigned a block of airspace from the minimum IFR altitude up to and including the assigned cruising altitude, and climb/descent within the block is at pilot's discretion. When the pilot verbally reports leaving an altitude in descent, he/she may not return to that altitude.

REFERENCE–

P/CG Term– Cruise.

6-6-3. SEPARATION BY PILOTS

When pilots of aircraft in direct radio communication with each other during climb and descent concur, you may authorize the lower aircraft, if climbing, or the upper aircraft, if descending, to maintain vertical separation.

Section 2. Special Operations

9-2-1. AIRCRAFT CARRYING DANGEROUS MATERIALS

a. Provide the following special handling to military aircraft or military contracted aircraft carrying dangerous materials when:

1. The words “dangerous cargo,” or “inert devices,” or both are contained in the remarks section of the filed flight plan, or

NOTE-

1. *Certain types of military flights carrying dangerous materials require strict adherence to military regulations and flight planning along carefully selected routes. These flights must avoid heavily populated areas.*

2. *“Inert devices” are devices containing no dangerous materials but closely resembling nuclear or explosive items that are classified as dangerous and could be easily mistaken for their dangerous counterparts.*

2. The pilot uses these words in radio communication.

b. If it becomes necessary to issue a clearance to amend the route/altitude, advise the pilot:

1. Of the proposed change, and

2. The amount of delay to expect if it is necessary to maintain the present route/altitude.

c. When it becomes necessary for the pilot to refuse a clearance amending his/her route/altitude, he/she will advise if the traffic delay is acceptable or if an alternate route/altitude is desired. In such cases, offer all possible assistance.

d. When the aircraft is provided an en route descent, do not vector the aircraft from the planned route unless the pilot concurs.

e. Use special patterns and routings in areas where they have been developed for these flights. If special patterns and routings have not been developed, employ normal procedures.

9-2-2. CELESTIAL NAVIGATION TRAINING

EN ROUTE

a. Approve flight plans specifying celestial navigation only when it is requested for USAF or USN aircraft.

NOTE-

An ATC clearance must be obtained by the pilot before discontinuing conventional navigation to begin celestial navigation training. The pilot will advise when discontinuing celestial navigation and resuming conventional navigation. Celestial navigation training will be conducted within 30 NM of the route centerline specified in the en route clearance unless otherwise authorized by ATC. During celestial navigation training, the pilot will advise ATC before initiating any heading changes which exceed 20 degrees.

b. Within conterminous U.S. airspace, limit celestial navigation training to transponder-equipped aircraft within areas of ARTCC radar coverage.

c. Prior to control transfer, ensure that the receiving controller is informed of the nature of the celestial navigation training leg.

REFERENCE-

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

9-2-3. EXPERIMENTAL AIRCRAFT OPERATIONS

a. When notified that an experimental aircraft requires special handling:

NOTE-

14 CFR Section 91.319(d)(3) requires that each person operating an aircraft with an experimental certificate must notify the control tower of the experimental nature of the aircraft when operating into or out of airports with operating control towers.

1. Clear the aircraft according to pilot requests as traffic permits and if not contrary to ATC procedures.

2. Once approved, do not ask the pilot to deviate from a planned action except to preclude an emergency situation.

b. At locations where volume or complexity of experimental aircraft operations warrant, a letter of agreement may be consummated between the facility and operator.

9-2-4. FAA RESEARCH AND DEVELOPMENT FLIGHTS

When coordinated in advance and traffic permits, approve requests for special flight procedures from aircraft participating in FAA research and develop-

ment test activities. These special procedures must be applied to participating aircraft/vehicles.

NOTE–

Special flight procedures for FAA research and development test activities must be approved by the facility air traffic manager prior to their use.

REFERENCE–

FAA Order JO 7210.3, Para 5–2–4, Research and Development Flights.

9–2–5. FLYNET

Provide expeditious handling for U.S. Government, civil or military aircraft using the code name “FLYNET.” Relay the code name as an element in the remarks position of the flight plan.

NOTE–

The code name “FLYNET” indicates that an aircraft is transporting a nuclear emergency team or a disaster control team to the location of a potential or actual nuclear accident or an accident involving chemical agents or hazardous materials. It is in the public interest that they reach their destination as rapidly as possible.

REFERENCE–

*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.
FAA Order JO 7610.4, Para 12–4–1, “FLYNET” Flights, Nuclear Emergency Teams.*

9–2–6. IFR MILITARY TRAINING ROUTES

a. Except for aircraft operating in the same altitude reservation, clear aircraft into an MTR provided separation will be applied between successive aircraft unless otherwise covered in a letter of agreement between the military scheduling activity and the concerned ATC facility.

PHRASEOLOGY–

CLEARED INTO IR (designator).

MAINTAIN (altitude),

or

MAINTAIN IR (designator) ALTITUDE(S),

or

MAINTAIN AT OR BELOW (altitude),

or

CRUISE (altitude),

and if required,

CROSS (fix) AT OR LATER THAN (time).

b. Unless otherwise covered in a letter of agreement between the military scheduling activity and the concerned FAA facility, clear aircraft to exit an MTR.

PHRASEOLOGY–

CLEARED TO (destination/clearance limit) FROM IR (designator/exit fix) VIA (route).

MAINTAIN (altitude).

c. If the provisions of subpara a above cannot be accomplished, MTRs may be designated for MARSA operations. To preclude an inadvertent compromise of MARSA standards by ATC, appropriate MARSA application for such routes must be covered in a letter of agreement with the military scheduling activity. Establish separation between aircraft as soon as practicable after operation on the designated MARSA route is ended.

NOTE–

For designated MARSA routes, the military assumes responsibility for separation for MTR aircraft that have passed the primary/alternate entry fix until separation is established by ATC after operations on the MARSA route are completed.

d. The lateral airspace to be protected along an MTR is the designated width of the route.

e. Prior to an aircraft entering an MTR, request the pilot’s estimate for the route’s exit/alternate exit fix, the pilot’s requested altitude after exiting and, if applicable, the number of reentries on a Strategic Training Range (STR).

PHRASEOLOGY–

(Call sign) VERIFY YOUR EXIT FIX ESTIMATE AND REQUESTED ALTITUDE AFTER EXIT,

and if applicable,

THE NUMBER OF REENTRIES.

f. Forward estimates for exit/alternate exit fixes, requested altitude after exit, and, if applicable, the number of reentries on the STR.

g. Apply the procedures of Paragraph 6–1–2, Nonreceipt of Position Report, based upon the pilot’s estimate for the route exit fix.

h. Clearance may be issued to amend or restrict operations on a route for ATC considerations. Where a route has been designated MARSA in accordance with subpara c, ATC must not amend or restrict

operations in such a manner as to compromise MARSA provisions.

NOTE—

When MARSA is provided through route scheduling and circumstances prevent the pilot from entering the route within established time limits, it must be the responsibility of the pilot to inform the ATC facility and advise his/her intentions.

i. If an aircraft on an IR experiences a two-way radio communications failure and you are unable to determine if the aircraft is proceeding VFR in accordance with 14 CFR Section 91.185(b) or the aircraft has not been positively radar identified:

1. Provide separation to the destination airport based on the aircraft complying with the following:

(a) Maintain to the exit/alternate exit fix the higher of the following altitudes:

(1) The minimum IFR altitude for each of the remaining route segment(s) remaining on the route.

(2) The highest altitude assigned in the last ATC clearance.

(b) Depart the exit/alternate exit fix at the appropriate altitude specified in subpara (a) above, then climb/descend to the altitude filed in the flight plan for the remainder of the flight, or

NOTE—

*In the event of a two-way communications failure, ATC will be based on the following anticipated pilot action at the exit fix. Unless otherwise covered in a letter of agreement, and if the pilot is unable to comply with the VFR provisions of 14 CFR Section 91.185/FLIP IFR Supplement, the pilot will exercise his/her emergency authority, squawk transponder **Code 7700**, depart the exit/alternate exit fix and climb/descend (continuing to squawk 7700) to the altitude filed in the flight plan. Subsequent transponder operations will be in accordance with Paragraph 10-4-4, Communications Failure. Air traffic controller action from the exit fix is as prescribed in Paragraph 10-1-1, Emergency Determinations.*

(c) Proceed in accordance with the lost communication procedure contained in letters of agreement.

2. Continue to monitor the last ATC assigned discrete code.

NOTE—

*Pilots who experience a two-way radio failure will adjust their transponder to **Code 7700** during climb/descent to*

*altitude filed for the next leg of the flight plan; then change to **Code 7600** for a period of 15 minutes. At the end of each 15-minute period, he/she will squawk 7700 for a period of 1 minute; all other times he/she will squawk 7600.*

j. Impose delays, if needed, to eliminate conflict with nonparticipating IFR aircraft when necessary to preclude denial of IR usage. Advise the pilot of the expected length and reason for delay.

9-2-7. INTERCEPTOR OPERATIONS

Provide maximum assistance to expedite the movement of interceptor aircraft on active air defense (scrambles) missions until the unknown aircraft is identified in accordance with the policies and procedures published in FAA Order JO 7610.4, Special Operations.

NOTE—

The FAA and the military have mutually agreed to the implementation of policies and procedures for control of air defense interceptor operations. Effective coordination and cooperation between FAA and the military at all levels are essential if policy objectives are to be met.

a. The ADCF initiating the SCRAMBLE must identify the mission as an active air defense mission.

b. ATC services must be used for active air defense missions insofar as the circumstances and situation permits.

c. Upon request, the ATC facility must expedite transfer of the control jurisdiction of the interceptors to the requesting ADCF.

9-2-8. SPECIAL INTEREST SITES

a. Immediately relay any reports or information regarding unusual aircraft activities in the vicinity of special interest sites such as nuclear power plants, power plants, dams, refineries, etc., to supervisory/CIC personnel.

NOTE—

Air traffic controllers have no responsibilities to monitor or observe aircraft in the vicinity of special interest sites unless directed by supervisory/CIC personnel.

9-2-9. SPECIAL AIR TRAFFIC RULES (SATR) AND SPECIAL FLIGHT RULES AREA (SFRA)

The Code of Federal Regulations prescribes special air traffic rules for aircraft operating within the boundaries of certain designated airspace. These

areas are listed in 14 CFR Part 93 and can be found throughout the NAS. Procedures, nature of operations, configuration, size, and density of traffic vary among the identified areas.

a. Special Flight Rules Areas are areas of airspace wherein the flight of aircraft is subject to special air traffic rules set forth in 14 CFR Part 93, unless otherwise authorized by air traffic control. Not all areas listed in 14 CFR Part 93 are Special Flight Rules Areas, but special air traffic rules apply to all areas designated as SFRA.

REFERENCE–

14 CFR Part 93, Special Air Traffic Rules.

P/CG, SPECIAL AIR TRAFFIC RULES (SATR)

P/CG, SPECIAL FLIGHT RULES AREA (SFRA)

b. Each person operating an aircraft to, from, or within airspace designated as a SATR area or SFRA must adhere to the special air traffic rules set forth in 14 CFR Part 93, as applicable, unless otherwise authorized or required by ATC.

9-2-10. ATC SECURITY SERVICES FOR THE WASHINGTON, DC, SPECIAL FLIGHT RULES AREA (DC SFRA)

Provide ATC security services at locations where procedures are required for tracking aircraft in security services airspace. ATC security services are designed to support the national security mission of the FAA and other agencies. Two-way radio communications, flight planning, and an operational transponder on an assigned code are required for operations in the designated area.

a. When the assigned code is observed, advise the aircraft to proceed on course/as requested but to remain outside of Class B, C, and/or D airspace as appropriate.

PHRASEOLOGY–

(ACID) TRANSPONDER OBSERVED PROCEED ON COURSE/AS REQUESTED; REMAIN OUTSIDE (class) AIRSPACE.

1. Maintain continuous security tracking of VFR aircraft operating in the designated area to assist security forces in situational awareness. Immediately report all instances of loss of radio communication or the inability to conduct security tracking of an aircraft to the operations supervisor (OS)/CIC and wait for instructions.

2. Basic separation services to aircraft, for example, IFR, SVFR, Class B, Class C, TRSA, do not apply to ATC security tracking.

3. Aircraft with operating transponders, but without operating Mode C (altitude), require specific authorization from ATC to operate in the SFRA. ATC must coordinate with the Domestic Events Network (DEN) before approval.

4. Aircraft flying too low for radar coverage must be instructed to report landing or exiting the SFRA. Keep flight progress strips on these aircraft until pilot reports landing or exiting the SFRA. If a flight progress strip does not exist for the aircraft, record the call sign, transponder code, entry point (for example, north, northeast, east), and time of entry into the SFRA.

PHRASEOLOGY–

(Call sign), REPORT LANDING OR LEAVING THE SFRA.

5. United States military, law enforcement, and aeromedical flights are exempt from filing flight plans.

b. Establishing two-way Communications.

1. Pilots must establish two-way radio communications with ATC prior to entering the security service area. Responding to a radio call with, “(a/c call sign) standby,” establishes radio communications and the pilot may enter the area, provided all other security requirements have been satisfied.

2. Aircraft requesting security services should not normally be held. However, if holding is necessary or workload/traffic conditions prevent immediate provision of ATC security services, inform the pilot to remain outside the designated area until conditions permit the provision of ATC security services. Inform the pilot of the expected length of delay.

PHRASEOLOGY–

(A/C call sign) REMAIN OUTSIDE OF THE (location) AND STANDBY. EXPECT (time) MINUTES DELAY.

c. Termination of Service.

1. If the aircraft is not landing within the designated area, provide security services until the aircraft exits the area and then advise the aircraft to squawk VFR and that frequency change is approved.

PHRASEOLOGY–
SQUAWK VFR, FREQUENCY CHANGE APPROVED.

or

CONTACT (facility identification).

2. When an aircraft is landing at an airport inside the area, instruct the pilot to remain on the assigned transponder code until after landing.

PHRASEOLOGY–
(ACID) REMAIN ON YOUR ASSIGNED TRANSPONDER CODE UNTIL YOU LAND, FREQUENCY CHANGE APPROVED.

3. Using approved handoff functionality, transfer the data blocks of all security tracked aircraft that will enter another sector/position for coordination of aircraft information/location. Upon acceptance of the transferred information, instruct the pilot to contact the next sector/positions' frequency.

9-2-11. SECURITY NOTICE (SECNOT)

Upon receiving notification of a SECNOT, the controller must forward all information on the subject aircraft to the OS/CIC. If information is not known, broadcast call sign on all frequencies and advise the OS/CIC of the response.

REFERENCE–
P/CG Term – Security Notice.
FAA Order JO 7210.3, Chapter 20, Section 9, Security Notice (SECNOT).

9-2-12. LAW ENFORCEMENT OPERATIONS

a. In the event information is received pertaining to stolen aircraft, the controller must forward all information to the OS/CIC for reporting on the Domestic Events Network (DEN).

REFERENCE–
FAA Order JO 7210.3, Para 2-7-7, Cooperation With Law Enforcement Agencies.

b. Special law enforcement operations.

1. Special law enforcement operations include inflight identification, surveillance, interdiction and pursuit activities performed in accordance with official civil and/or military mission responsibilities.

2. To facilitate accomplishment of these special missions, exemptions from specified parts of Title 14 of the Code of Federal Regulations have been granted to designated departments and agencies. However, it

is each organization's responsibility to apprise ATC of their intent to operate under an authorized exemption before initiating actual operations.

REFERENCE–
FAA Order JO 7210.3, Para 19-3-1, Authorizations and Exemptions from Title 14, Code of Federal Regulations (14 CFR).

3. Additionally, some departments and agencies that perform special missions have been assigned coded identifiers to permit them to apprise ATC of ongoing mission activities and solicit special air traffic assistance.

REFERENCE–
FAA Order 7110.67, Air Traffic Management Security Services for Special Operations.

NOTE–
As specified in Para 2-1-4, Operational Priority, priority of handling for aircraft operating with coded identifiers will be the same as that afforded to SAR aircraft performing a SAR mission.

c. Assistance to law enforcement aircraft operations.

1. Provide the maximum assistance possible to law enforcement aircraft, when requested, in helping them locate suspect aircraft.

2. Communicate with law enforcement aircraft, when possible and if requested, on a frequency not paired with your normal communications frequencies.

3. Do not allow assistance to law enforcement aircraft to violate any required separation minima.

4. Do not assist VFR law enforcement aircraft in any way that will create a situation which, in your judgment, places the aircraft in unsafe proximity to terrain or other aircraft.

9-2-13. MILITARY AERIAL REFUELING

Authorize aircraft to conduct aerial refueling along published or special tracks at their flight plan altitude, unless otherwise requested.

PHRASEOLOGY–
CLEARED TO CONDUCT REFUELING ALONG (number) TRACK,

or

FROM (fix) TO (fix),

and

MAINTAIN REFUELING LEVEL (altitude),

or

MAINTAIN (altitude),

or

COMMENCING AT (altitude), DESCENDING TO (altitude).

NOTE—

1. During aerial refueling, tanker aircraft are responsible for receiver aircraft communication with ATC and for their navigation along the track.

2. Aerial refueling airspace is not sterilized airspace and other aircraft may transit this airspace provided vertical or lateral separation is provided from refueling aircraft.

3. MARSA begins between the tanker and receiver when the tanker and receiver(s) have entered the air refueling airspace and the tanker advises ATC that he/she is accepting MARSA.

4. MARSA ends between the tanker and receiver when the tanker advises ATC that the tanker and receiver aircraft are vertically positioned within the air refueling airspace and ATC advises MARSA is terminated.

REFERENCE—

FAA Order JO 7110.65, Para 2–1–II, Use of MARSA.

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

FAA Order JO 7610.4, Chapter 10, Aerial Refueling.

a. Provide radar assistance to the rendezvous for participating aircraft:

1. When requested, and

2. By providing vertical separation prior to MARSA declaration.

b. Do not request receiver aircraft that have been cleared to conduct air refueling and have departed the ARIP to:

1. Make code changes when less than 5 miles from the tanker.

2. Squawk standby when less than 1 mile or more than 3 miles from the tanker.

NOTE—

Requests for receiver aircraft to make code changes during air refueling diverts the receiver pilot's attention during a critical phase of flight.

c. When issuing an initial air refueling clearance, you may request a receiver to squawk standby when the receiver reaches a point 3 miles from the tanker.

NOTE—

1. Receiver aircraft will squawk normal when separation from the tanker is greater than 3 miles.

2. Once rendezvous is completed, heading and altitude assignments may be made with the tanker concurrence with MARSA remaining in effect.

3. Upon rendezvous completion, the tanker must keep receiver aircraft within 3 miles of the tanker until MARSA is terminated.

d. After MARSA has been declared, you should avoid issuing course or altitude changes prior to rendezvous.

NOTE—

Altitude or course changes issued will automatically void MARSA.

e. Do not use the altitude vacated during the refueling operation until the refueling aircraft has reported reaching the next IFR altitude.

REFERENCE—

FAA Order JO 7110.65, Para 6–6–2, Exceptions.

f. Approve requests by the tanker pilot for vectors or alternative routes or altitudes as follows:

1. Furnish vectors or alternative altitudes at any time.

2. Furnish nonradar routes only after the refueling aircraft have passed the ARCP.

NOTE—

1. To meet a training requirement that aerial refueling be accomplished in a nonradar environment, the military has requested that vectors be furnished only upon request.

2. The tanker commander is responsible for coordinating all inflight requests with other aircraft in the refueling mission before submission of such requests to the center.

3. Normally, aircraft conducting aerial refueling operations will utilize at least three consecutive altitudes.

g. Unless a vector or alternative route has been furnished, clear the aircraft to depart the refueling track at a navigational reference point or egress fix.

h. Request an aircraft to report the ARIP, ARCP, or egress fix as necessary.

PHRASEOLOGY—

REPORT:

A–R–I–P,

or

A–R–C–P,

or

EGRESS FIX.

i. Expect the following procedures in addition to those required by the appropriate parts of Title 14 of the Code of Federal Regulations in the event of two-way communications failure:

1. The tanker will depart the track from the highest altitude in the block.
2. The receiver will depart the track from the lowest altitude in the block.
3. Aircraft will squawk 7600 for at least 2 minutes prior to departing the track.

REFERENCE—

FAA Order JO 7110.65, Para 9–2–14, Military Operations Above FL 600.

9–2–14. MILITARY OPERATIONS ABOVE FL 600

Control aircraft operating above FL 600 using the following procedures:

- a. Flight plans involving supersonic flight are required 16 hours in advance of proposed departure times for processing and approval by the ARTCCs concerned. The originating ARTCC, where the flight plan is first filed, may waive the 16-hour advance filing requirement.
- b. The route of flight must be defined by at least one high altitude fix within each ARTCC area without regard to the distance between fixes. Additionally, the entry and exit points of turns of 90 degrees or more will be designated.
- c. Elapsed times from takeoff to the first fix in each ARTCC area must be included in the route of flight.
- d. The ARTCC which originates the flight plan must forward departure times to all ARTCCs responsible for processing the flight plan.
- e. Approval of the flight plan indicates approval of both route and flight levels (if stated) including operations below FL 600 (aerial refueling).

PHRASEOLOGY—

CLEARED AS FILED VIA ROUTE AND FLIGHT LEVELS.

REFERENCE—

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

f. Separation. Use the following as minima in lieu of the corresponding type of separation prescribed in:

NOTE—

The primary method described to provide separation between two supersonic aircraft is to descend the aircraft at the lower FL and provide vertical separation since the aircraft at the higher FL may not be able to climb rapidly enough to establish the required separation. Another aspect which should be considered is that supersonic aircraft during turns, either programmed or as the result of vectors, will lose a few thousand feet. Vectoring supersonic aircraft seriously affects the range and mission objectives. Radar separation is the preferred method of separating a subsonic aircraft both from another subsonic aircraft or from a supersonic aircraft.

1. Paragraph 4–5–1, Vertical Separation Minima: 5,000 feet.

NOTE—

1. *The security requirements of the military services preclude the transmission of actual altitude information on the air/ground or landline circuits. A classified document detailing the plan for ascertaining altitude codes for the day should be readily available to the controllers at their positions of operation.*

2. *Pilots will report their altitude, using the coded plan, and intended flight profile on initial contact with each ARTCC.*

2. Paragraph 6–5–4, Minima Along Other Than Established Airways or Routes: Protect the airspace 25 miles either side of the route centerline. For turns by supersonic aircraft, protect the airspace 75 miles on the overflown side and 25 miles on the other side. For turns by subsonic aircraft, protect the airspace 34 miles on the overflown side and 25 miles on the other side.

REFERENCE—

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

9–2–15. MILITARY SPECIAL USE FREQUENCIES

a. Assign special use frequency to:

NOTE—

Special use frequencies are assigned to ARTCCs in such a manner that adjacent ARTCCs will not have the same frequency. They are to be used within the ARTCC area jurisdiction from the established FL base of the high altitude sectors and above. Each high altitude sector should have the capability to use the special use frequency on a shared basis.

1. USAF, U.S. Navy, and Air National Guard (ANG) single-pilot jet aircraft formations operating

at night or in instrument weather conditions. Formations of five or more USAF aircraft deploying either to a continental U.S. staging base or nonstop to an overseas location are authorized to use special use frequencies at any time. Normally these deployments will be conducted within an altitude reservation.

2. U-2 and B-57 (pressure suit flights) aircraft at all altitudes/FLs except where terminal operations require the assignment of other frequencies.

NOTE-

Aerial refueling operations may require that aircraft leave the special use frequency for communications with the tanker. This will occur when the receiver is approximately 200 miles from the ARCP. The tanker aircraft will remain on the ARTCC assigned frequency and will relay clearances to the receiver as required. An alternate means of communications between the tanker and receiver is HF radio.

3. All aircraft during supersonic flight.

NOTE-

Pilots are expected to request assignment of the special use frequency in the remarks section of the flight plan or before entering supersonic flight. B-57 aircraft engaged in pressure suit operations will use the static call sign KITE and flights will normally be conducted from Dover, Eielson, Ellington, Hickman, Howard, Kirtland, and McClellan Air Force Bases.

4. E-3A AWACS mission crews when operations are being conducted as an MRU in accordance with appropriate letters of agreement.

b. The special use frequency may be assigned as “backup” for the high-altitude sector when direct communications are essential because of a potential emergency control situation.

c. Do not assign the special use frequency to the aircraft in subpara a1 above, when they will operate in airspace assigned for special military operations.

9-2-16. AVOIDANCE OF AREAS OF NUCLEAR RADIATION

a. Advise pilots whenever their proposed flight path will traverse a reported or forecasted area of hazardous radiation and reroute the aircraft when requested by the pilot.

REFERENCE-

FAA Order JO 7610.4, Para 4-4-4, Avoidance of Hazardous Radiation Areas.

b. Inform pilots when an airfield of intended landing lies within a reported or forecasted area of

hazardous radiation and request the pilot to advise his/her intentions.

9-2-17. SAMP FLIGHTS

Provide special handling to U.S. Government and military aircraft engaged in aerial sampling/surveying missions, sampling for nuclear, chemical, or hazardous material contamination. Honor inflight clearance requests for altitude and route changes to the maximum extent possible. Other IFR aircraft may be recleared so that requests by SAMP aircraft are honored. Separation standards as outlined in this order must be applied in all cases.

REFERENCE-

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

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

FAA Order JO 7610.4, Para 4-4-4, Avoidance of Hazardous Radiation Areas.

9-2-18. AWACS/NORAD SPECIAL FLIGHTS

Do not delay E-3 AWACS aircraft identified as “AWACS/NORAD Special” flights. The following control actions are acceptable while expediting these aircraft to the destination orbit.

a. En route altitude changes \pm 2,000 feet from the requested flight level.

b. Radar vectors or minor route changes that do not impede progress towards the destination orbit.

NOTE-

NORAD has a requirement to position E-3 AWACS aircraft at selected locations on a time-critical basis. To the extent possible these flights will utilize routes to the destination orbit that have been precoordinated with the impacted ATC facilities. To identify these flights, the words “AWACS/NORAD SPECIAL” will be included as the first item in the remarks section of the flight plan.

9-2-19. WEATHER RECONNAISSANCE FLIGHTS

TEAL and NOAA mission aircraft fly reconnaissance flights to gather meteorological data on winter storms, (NWSOP missions), hurricanes and tropical cyclones (NHOP missions). The routes and timing of these flights are determined by movement of the storm areas and not by traffic flows.

a. When a dropsonde release time is received from a TEAL or NOAA mission aircraft, workload and priorities permitting, controllers must advise the

mission aircraft of any traffic estimated to pass through the area of the drop at altitudes below that of the mission aircraft. This traffic advisory must include:

1. Altitude.
2. Direction of flight.
3. ETA at the point closest to drop area (or at the fix/intersection where drop will occur).

NOTE—

A dropsonde is a 14-inch long cardboard cylinder about 2.75 inches in diameter, that weighs approximately 14 ounces (400 grams), and has a parachute attached. When released from the aircraft it will fall at a rate of approximately 2,500 feet per minute. Controllers should recognize that a dropsonde released at FL 310 will be a factor for traffic at FL 210 four minutes later. It is the aircraft commanders responsibility to delay release of dropsondes if traffic is a factor. Aircraft commanders will delay release of dropsondes based solely upon traffic as issued by ATC.

b. When advised that an airborne TEAL or NOAA aircraft is requesting a clearance via CARCAH, issue the clearance in accordance with Chapter 4, IFR, Section 2, Clearances.

REFERENCE—

FAA Order JO 7110.65, Para 4-2-1, Clearance Items.
FAA Order JO 7110.65, Para 4-2-2, Clearance Prefix.
FAA Order JO 7110.65, Para 4-2-3, Delivery Instructions.

c. If a TEAL or NOAA mission aircraft must be contacted but is out of VHF, UHF, and HF radio range, advise the supervisory traffic management coordinator-in-charge.

REFERENCE—

FAA Order JO 7210.3, Para 5-3-4, Weather Reconnaissance Flights.
FAA Order JO 7110.65, Para 2-1-4, Operational Priority.

d. Aircraft operations associated with a Weather Reconnaissance Area (WRA) must be conducted in accordance with the Memorandum of Agreement between the National Oceanic and Atmospheric Administration Aircraft Operations Center, U.S. Air Force Reserve Command 53rd Weather Reconnaissance Squadron, and the Federal Aviation Administration Air Traffic Organization in Support of the National Hurricane Operations Plan (FAA Order JO 7610.4, Appendix 3), and the associated letters of agreement.

9-2-20. EVASIVE ACTION MANEUVER

Approve a pilot request to conduct an evasive action maneuver only on the basis of a permissible traffic situation. Specify the following items, as necessary, when issuing approval:

NOTE—

The “evasive action” maneuver is performed by a bomber/fighter bomber aircraft at or above FL 250 along a 60 NM long segment of the flight plan route overlying a RBS or other site and includes:

1. Flying a zigzag pattern on both the left and right side of the flight plan route centerline. Altitude deviations are made in conjunction with the lateral maneuvering.
2. Lateral deviations from the route centerline will not normally exceed 12 miles. Altitude variations must not exceed plus or minus 1,000 feet of the assigned flight level; i.e., confined within a 2,000 foot block.

a. Specific route segment on which the maneuver will take place.

b. Distance of maximum route deviation from the centerline in miles.

c. Altitude.

PHRASEOLOGY—

CLEARED TO CONDUCT EVASIVE ACTION
MANEUVER FROM (fix) TO (fix),

and

(number of miles) EITHER SIDE OF CENTERLINE,

and

MAINTAIN (altitude) THROUGH (altitude),

and

COMPLETE MANEUVER AT (fix) AT (altitude).

9-2-21. NONSTANDARD FORMATION/CELL OPERATIONS

Occasionally the military is required to operate in a nonstandard cell formation and controllers should be knowledgeable of the various tactics employed and the procedures used.

REFERENCE—

FAA Order JO 7610.4, Chapter 12, Section 11, Formation Flight.

a. Formation leaders are responsible for obtaining ATC approval to conduct nonstandard formation/cell operations.

b. When nonstandard formation/cell operations have been approved, controllers must assign

sufficient altitudes to allow intra-cell vertical spacing of 500 feet between each aircraft in the formation.

c. Control nonstandard formation/cell operations on the basis that MARSA is applicable between the participating aircraft until they establish approved separation which is acknowledged by ATC.

d. Apply approved separation criteria between the approved nonstandard formation/cell envelope and nonparticipating aircraft.

e. Clear aircraft operating in a nonstandard formation/cell to the breakup fix as the clearance limit. Forward data pertaining to route or altitude beyond the breakup point to the center concerned as a part of the routine flight plan information.

f. *EN ROUTE*. If the breakup occurs in your area, issue appropriate clearances to authorize transition from formation to individual routes or altitudes. If a breakup cannot be approved, issue an appropriate clearance for the flight to continue as a formation.

■ 9-2-22. OPEN SKIES TREATY AIRCRAFT

a. Open Skies aircraft will be identified by the call sign "OSY" (Open Skies) followed by the flight number and a one-letter mission suffix.

EXAMPLE-

OSY123D

Mission suffixes:

**F = Observation Flights (Priority).*

**D = Demonstration Flights (Priority).*

**T = Transit Flights (Nonpriority).*

NOTE-

1. *Observation/Demonstration flights are conducted under rigid guidelines outlined in the Treaty on Open Skies that govern sensor usage, maximum flight distances, altitudes and priorities.*

2. *Transit flights are for the sole purpose of moving an Open Skies aircraft from airport to airport in preparation for an actual Open Skies "F" or "D" mission.*

b. Provide priority and special handling to expedite the movement of an Open Skies observation or demonstration flight.

REFERENCE-

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

FAA Order JO 7210.3, Para 5-3-5, Open Skies Treaty Aircraft Priority Flights (F and D).

Treaty on Open Skies, Treaty Document, 102-37.

c. Open Skies (F and D) Treaty aircraft, while maintaining compliance with ATC procedures, must

have priority over activities in special use airspace (SUA)/Air Traffic Control Assigned Airspace (ATCAA). Open Skies (F and D) Treaty aircraft are nonparticipating aircraft and must be allowed to transit SUA/ATCAA as filed after appropriate and timely coordination has been accomplished between the using agency and controlling agency.

NOTE-

A letter of agreement is not required for nonparticipating aircraft to transit deactivated/released airspace.

REFERENCE-

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

1. Open Skies (F and D) Treaty flights transiting SUA/ATCAA will be handled in the following manner:

(a) The ATC facility controlling the Open Skies (F and D) Treaty flight must advise the using agency, or appropriate ATC facility, upon initial notification and when the aircraft is 30 minutes from the SUA/ATCAA boundary; and

(1) For active SUA/ATCAA with an ATC facility, coordinate and execute the transit of Open Skies (F and D) Treaty aircraft.

REFERENCE-

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

(2) For active SUA/ATCAA without an ATC facility, the using agency must deactivate/release the SUA/ATCAA to permit the Open Skies (F and D) Treaty aircraft to transit as filed in proximity to the active SUA/ATCAA. When deactivating/releasing the SUA/ATCAA for this purpose, the using agency is only required to deactivate/release the portion of the SUA/ATCAA to the controlling agency that is necessary to provide approved separation.

(b) The using agency must deactivate/release the SUA/ATCAA, or portion thereof, no later than 15 minutes prior to the Open Skies (F and D) Treaty aircraft reaching the SUA/ATCAA boundary.

(c) If the controlling agency is unable to confirm with the using agency that all conflicting activities in the SUA/ATCAA have ceased, the Open Skies aircraft must not be permitted access to the SUA/ATCAA.

REFERENCE-

FAA Order JO 7110.65, Para 9-3-2, Separation Minima

2. Return SUA/ATCAA to the using agency, if requested, within (15) minutes after the Open Skies (F and D) Treaty aircraft clears the SUA/ATCAA.

d. Clear the aircraft according to the filed flight plan.

1. Do not ask the pilot to deviate from the planned action or route of flight except to preclude an emergency situation or other higher priority aircraft.

2. Do not impose air traffic control delays

except to preclude emergency situations or other higher priority aircraft.

NOTE-

If for reasons of flight safety the route or altitude must be changed, return the aircraft to the filed flight plan route as soon as practical.

Chapter 10. Emergencies

Section 1. General

10-1-1. EMERGENCY DETERMINATIONS

a. An emergency can be either a *Distress* or an *Urgency* condition as defined in the “Pilot/Controller Glossary.”

b. A pilot who encounters a *Distress* condition should declare an emergency by beginning the initial communication with the word “Mayday,” preferably repeated three times. For an *Urgency* condition, the word “Pan-Pan” should be used in the same manner.

c. If the words “Mayday” or “Pan-Pan” are not used but you believe an emergency or an urgent situation exists, handle it as though it were an emergency.

d. Because of the infinite variety of possible emergency situations, specific procedures cannot be prescribed. However, when you believe an emergency exists or is imminent, select and pursue a course of action which appears to be most appropriate under the circumstances and which most nearly conforms to the instructions in this manual.

REFERENCE—

FAA Order JO 7110.65, Para 9-2-6, IFR Military Training Routes.

10-1-2. OBTAINING INFORMATION

a. Use the information provided or solicit more information as necessary to assist the distressed aircraft. Provide assistance that is consistent with the requests of the pilot. If you believe an alternative course of action may prove more beneficial, transmit your recommendation(s) to the pilot.

REFERENCE—

14 CFR § 91.3 Responsibilities and authority of pilot in command.

b. If an emergency was declared by an Emergency Autoland system, the aircraft may transmit the following:

1. Callsign.
2. That Emergency Autoland has been activated.
3. Position (mileage and direction) relative to a nearby airport.

4. The intended emergency landing airport and the planned landing runway.

5. An ETE to the emergency landing airport.

EXAMPLE—

“Aircraft, N123B, pilot incapacitation, 12 miles southwest of KOJC, landing KIXD airport. Emergency Autoland in 13 minutes on runway 36.”

NOTE—

1. System configurations may vary between manufacturers. All systems should be configured to transmit enough information for the controller to respond effectively to the emergency.
2. In the event of frequency congestion, an Emergency Autoland system may transmit on 121.5 or CTAF instead of the last assigned ATC frequency.

10-1-3. PROVIDING ASSISTANCE

Provide maximum assistance to aircraft in distress. Enlist the services of available radar facilities operated by the FAA, the military services, and the Federal Communications Commission, as well as their emergency services and facilities, when the pilot requests or when you deem necessary.

REFERENCE—

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

10-1-4. RESPONSIBILITY

a. If you are in communication with an aircraft in distress, handle the emergency and coordinate and direct the activities of assisting facilities. Transfer this responsibility to another facility only when you feel better handling of the emergency will result.

b. When you receive information about an aircraft in distress, forward detailed data to the center in whose area the emergency exists.

NOTE—

1. Centers serve as the central points for collecting information, for coordinating with SAR, and for conducting a communications search by distributing any necessary ALNOTs concerning:

- a. Overdue or missing IFR aircraft.
- b. Aircraft in an emergency situation occurring in their respective area.
- c. Aircraft on a combination VFR/IFR or an airfiled

IFR flight plan and 30 minutes have passed since the pilot requested IFR clearance and neither communication nor radar contact can be established with it. For SAR purposes, these aircraft are treated the same as IFR aircraft.

d. Overdue or missing aircraft which have been authorized to operate in accordance with special VFR clearances.

2. Notifying the center about a VFR aircraft emergency allows provision of IFR separation if considered necessary.

REFERENCE—

FAA Order JO 7110.65, Para 10-2-5, Emergency Situations.

FAA Order JO 7110.65, Para 10-3-2, Information to be Forwarded to ARTCC.

FAA Order JO 7110.65, Para 10-3-3, Information to be Forwarded to RCC.

c. If the aircraft involved is operated by a foreign air carrier, notify the center serving the departure or destination point, when either point is within the U.S., for relay to the operator of the aircraft.

d. The ARTCC must be responsible for receiving and relaying all pertinent ELT signal information to the appropriate authorities.

REFERENCE—

FAA Order JO 7110.65, Para 10-2-10, Emergency Locator Transmitter (ELT) Signals.

e. When consideration is given to the need to escort an aircraft in distress, evaluate the close formation required by both aircraft. Special consideration should be given if the maneuver takes the aircraft through the clouds.

f. Before a determination is made to have an aircraft in distress be escorted by another aircraft, ask the pilots if they are familiar with and capable of formation flight.

1. Do not allow aircraft to join up in formation during emergency conditions, unless:

(a) The pilots involved are familiar with and capable of formation flight.

(b) They can communicate with one another, and have visual contact with each other.

2. If there is a need for aircraft that are not designated as search and rescue aircraft to get closer to one another than radar separation standards allow, the maneuver must be accomplished, visually, by the aircraft involved.

10-1-5. COORDINATION

Coordinate efforts to the extent possible to assist any aircraft believed overdue, lost, or in emergency status.

10-1-6. AIRPORT GROUND EMERGENCY

TERMINAL

a. When an emergency occurs on the airport proper, control other air and ground traffic to avoid conflicts in the area where the emergency is being handled. This also applies when routes within the airport proper are required for movement of local emergency equipment going to or from an emergency which occurs outside the airport proper.

NOTE—

Aircraft operated in proximity to accident or other emergency or disaster locations may cause hindrances to airborne and surface rescue or relief operations. Congestion, distraction or other effects, such as wake turbulence from nearby airplanes and helicopters, could prevent or delay proper execution of these operations.

REFERENCE—

FAA Order JO 7210.3, Chapter 20, Temporary Flight Restrictions.
14 CFR Section 91.137, Temporary Flight Restrictions.

b. Workload permitting, monitor the progress of emergency vehicles responding to a situation. If necessary, provide available information to assist responders in finding the accident/incident scene.

10-1-7. INFLIGHT EMERGENCIES INVOLVING MILITARY FIGHTER-TYPE AIRCRAFT

a. The design and complexity of military fighter-type aircraft places an extremely high workload on the pilot during an inflight emergency. The pilot's full attention is required to maintain control of the aircraft. Therefore, radio frequency and transponder code changes should be avoided and radio transmissions held to a minimum, especially when the aircraft experiencing the emergency is at low altitude.

b. Pilots of military fighter-type aircraft, normally single engine, experiencing or anticipating loss of engine power or control may execute a flameout pattern in an emergency situation. Circumstances may dictate that the pilot, depending on the position and nature of the emergency, modify the pattern based on actual emergency recovery requirements.

c. Military airfields with an assigned flying mission may conduct practice emergency approaches. Participating units maintain specific procedures for conducting these operations.

REFERENCE–

FAA Order JO 7110.65, Para 3–10–13, Simulated Flameout (SFO) Approaches/Emergency Landing Pattern (ELP) Operations/Practice Precautionary Approaches.

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. 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.

REFERENCE—

FAA Order JO 7610.4, Chapter 7, Procedures for Handling Suspicious Flight Situations and Hijacked Aircraft.

FAA Order JO 7110.65, Para 5-2-14, Code Monitor.

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 subpara 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, Hijacked/Suspicious Aircraft Reporting and Procedures.

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 subpara a and Paragraph 10-2-16, Guidance to Emergency Airport, must be used in conjunction with the information derived from any automated emergency airport information source.

10-2-16. GUIDANCE TO EMERGENCY AIRPORT

a. When necessary, use any of the following for guidance to the airport:

1. Radar.

2. Following another aircraft.

3. NAVAIDs.

4. Pilotage by landmarks.

5. Compass headings.

b. Consideration to the provisions of Para 10-2-15, Emergency Airport Recommendation, must be used in conjunction with the information derived from any automated emergency airport information source.

10-2-17. EMERGENCY OBSTRUCTION VIDEO MAP (EOVM)

a. The EOVM is intended to facilitate advisory service to an aircraft in an emergency situation wherein an appropriate terrain/obstacle clearance minimum altitude cannot be maintained. It must only be used and the service provided under the following conditions:

1. The pilot has declared an emergency, or

2. The controller has determined that an emergency condition exists or is imminent because of the pilot's inability to maintain an appropriate terrain/obstacle clearance minimum altitude.

NOTE-

Appropriate terrain/obstacle clearance minimum altitudes may be defined as Minimum IFR Altitude (MIA), Minimum En Route Altitude (MEA), Minimum Obstruction Clearance Altitude (MOCA), or Minimum Vectoring Altitude (MVA).

b. When providing emergency vectoring service, the controller must advise the pilot that any headings issued are emergency advisories intended only to direct the aircraft toward and over an area of lower terrain/obstacle elevation.

NOTE—

Altitudes and obstructions depicted on the EOVM are the actual altitudes and locations of the obstacle/terrain and contain no lateral or vertical buffers for obstruction clearance.

REFERENCE—

FAA Order JO 7210.3, Para 3–8–4, 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). Additionally, if this phone number is out of service, alternate back-up bridge phone numbers should be used to contact the DEN: (405) 225–2444 or (844) 663–9723 (toll free).*

2. *Except in extraordinary circumstances, such as a situation requiring ATC intervention, follow-on coordination regarding the incident will not involve ATC frequencies.*

3. *The initial report to a U.S. ATC facility may be passed from a prior ATC facility along the route of flight.*

REFERENCE—

FAA Order JO 7210.3, Para 2-1-33, Reporting Death, Illness, or Other Public Health Risk On Board Aircraft

Section 4. Control Actions

10-4-1. TRAFFIC RESTRICTIONS

IFR traffic which could be affected by an overdue or unreported aircraft must be restricted or suspended unless radar separation is used. The facility responsible must restrict or suspend IFR traffic for a period of 30 minutes following the applicable time listed in subparas a through e:

- a. The time at which approach clearance was delivered to the pilot.
- b. The EFC time delivered to the pilot.
- c. The arrival time over the NAVAID serving the destination airport.
- d. The current estimate, either the control facility's or the pilot's, whichever is later, at:
 - 1. The appropriate en route NAVAID or fix, and
 - 2. The NAVAID serving the destination airport.
- e. The release time and, if issued, the clearance void time.

REFERENCE-

FAA Order JO 7110.65, Para 4-3-4, *Departure Restrictions, Clearance Void Times, Hold for Release, and Release Times.*

10-4-2. LIGHTING REQUIREMENTS

a. **EN ROUTE.** At nontower or non-FSS locations, request the airport management to light all runway lights, approach lights, and all other required airport lighting systems for at least 30 minutes before the ETA of the unreported aircraft until the aircraft has been located or for 30 minutes after its fuel supply is estimated to be exhausted.

b. **TERMINAL.** Operate runway lights, approach lights, and all other required airport lighting systems for at least 30 minutes before the ETA of the unreported aircraft until the aircraft has been located or for 30 minutes after its fuel supply is estimated to be exhausted.

REFERENCE-

FAA Order JO 7110.65, Para 3-4-1, *Emergency Lighting.*

10-4-3. TRAFFIC RESUMPTION

After the 30-minute traffic suspension period has expired, resume normal air traffic control if the operators or pilots of other aircraft concur. This concurrence must be maintained for a period of 30 minutes after the suspension period has expired.

REFERENCE-

FAA Order JO 7110.65, Para 4-3-4, *Departure Restrictions, Clearance Void Times, Hold for Release, and Release Times.*

10-4-4. COMMUNICATIONS FAILURE

Take the following actions, as appropriate, if two-way radio communications are lost with an aircraft:

NOTE-

1. *When an IFR aircraft experiences two-way radio communications failure, air traffic control is based on anticipated pilot actions. Pilot procedures and recommended practices are set forth in the AIM, CFRs, and pertinent military regulations.*

2. *Should the pilot of an aircraft equipped with a coded radar beacon transponder experience a loss of two-way radio capability, the pilot can be expected to adjust the transponder to reply on Mode 3/A Code 7600.*

a. In the event of lost communications with an aircraft under your control jurisdiction use all appropriate means available to reestablish communications with the aircraft. These may include, but not be limited to, emergency frequencies, NAVAIDs that are equipped with voice capability, FSS, Aeronautical Radio Incorporated (ARINC), etc.

NOTE-

1. *ARINC is a commercial communications corporation which designs, constructs, operates, leases or otherwise engages in radio activities serving the aviation community. ARINC has the capability of relaying information to/from subscribing aircraft throughout the country.*

2. *Aircraft communications addressing and reporting system (ACARS) or selective calling (SELCAL) may be utilized to reestablish radio communications with suitably equipped aircraft. ACARS can be accessed by contacting the San Francisco ARINC communications center, watch supervisor, at 925-294-8297 and 800-621-0140. Provide ARINC the aircraft call sign, approximate location, and contact instructions. In order to utilize the SELCAL system, the SELCAL code for the subject aircraft must be known. If the SELCAL code is not contained in the remarks section of the flight plan, contact the pertinent air carrier dispatch*

office to determine the code. Then contact the San Francisco ARINC communications center, watch supervisor, at 925-294-8297 and 800-621-0140. Provide ARINC the aircraft call sign, SELCAL code, approximate location, and contact instructions.

b. Broadcast clearances through any available means of communications including the voice feature of NAVAIDs.

NOTE—

1. *Some UHF equipped aircraft have VHF navigation equipment and can receive 121.5 MHz.*

2. *“Any available means” includes the use of FSS and ARINC.*

REFERENCE—

FAA Order JO 7110.65, Para 4-2-2, Clearance Prefix.

c. Attempt to re-establish communication by having the aircraft use its transponder or make turns to acknowledge clearances and answer questions. Request any of the following in using the transponder:

1. Request the aircraft to reply Mode 3/A “IDENT.”

2. Request the aircraft to reply on **Code 7600** or if already on **Code 7600**, the appropriate stratum code.

3. Request the aircraft to change to “stand-by” for sufficient time for you to be sure that the lack of a target is the result of the requested action.

PHRASEOLOGY—

REPLY NOT RECEIVED, (appropriate instructions).

(Action) OBSERVED, (additional instructions/information if necessary).

d. Broadcast a clearance for the aircraft to proceed to its filed alternate airport at the MEA if the aircraft operator concurs.

REFERENCE—

FAA Order JO 7110.65, Para 5-2-8, Radio Failure.

FAA Order JO 7110.65, Para 9-2-6, IFR Military Training Routes. ■

e. If radio communications have not been (re) established with the aircraft after 5 minutes, consider the aircraft’s or pilot’s activity to be suspicious and report it to the OS/CIC per FAA Order JO 7610.4, Chapter 7, Hijacked/Suspicious Aircraft Reporting and Procedures, and Paragraph 2-1-26f, Supervisory Notification, of this order.

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:

AUTOMATED EMERGENCY DESCENT
EMERGENCY AUTOLAND SYSTEM
EMERGENCY DESCENT MODE
STNR ALT RESERVATION

e. Terms Deleted:

TELEPHONE INFORMATION BRIEFING SERVICE
TIBS
TRANSCRIBED WEATHER BROADCAST (TWEB)
TWEB

f. Terms Modified:

GROSS NAVIGATION ERROR (GNE)
GROUND COMMUNICATION OUTLET (GCO)
STATIONARY RESERVATIONS

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

A

AAI–

(See ARRIVAL AIRCRAFT INTERVAL.)

AAR–

(See AIRPORT ARRIVAL RATE.)

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.

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.)

ACLT–

(See ACTUAL CALCULATED LANDING TIME.)

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 CALCULATED LANDING TIME– ACLT is a flight’s frozen calculated landing time. An actual time determined at freeze calculated landing time (FCLT) or meter list display interval (MLDI) for the adapted vertex for each arrival aircraft based upon runway configuration, airport acceptance rate, airport arrival delay period, and other metered arrival aircraft. This time is either the vertex time of arrival (VTA) of the aircraft or the tentative calculated landing time (TCLT)/ACLT of the previous aircraft plus the arrival aircraft interval (AAI), whichever is later. This time will not be updated in response to the aircraft’s progress.

ACTUAL NAVIGATION PERFORMANCE (ANP)–

(See REQUIRED NAVIGATION PERFORMANCE.)

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 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.)

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,

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.

ARINC– An acronym for Aeronautical Radio, Inc., a corporation largely owned by a group of airlines. ARINC is licensed by the FCC as an aeronautical station and contracted by the FAA to provide communications support for air traffic control and meteorological services in portions of international airspace.

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 AIRCRAFT INTERVAL– An internally generated program in hundredths of minutes based upon the AAR. AAI is the desired optimum interval between successive arrival aircraft over the vertex.

ARRIVAL CENTER– The ARTCC having jurisdiction for the impacted airport.

ARRIVAL DELAY– A parameter which specifies a period of time in which no aircraft will be metered for arrival at the specified airport.

ARRIVAL SECTOR– An operational control sector containing one or more meter fixes.

ARRIVAL SECTOR ADVISORY LIST– An ordered list of data on arrivals displayed at the PVD/MDM of the sector which controls the meter fix.

ARRIVAL SEQUENCING PROGRAM– The automated program designed to assist in sequencing aircraft destined for the same airport.

ARRIVAL TIME– The time an aircraft touches down on arrival.

ARSR–

(See AIR ROUTE SURVEILLANCE RADAR.)

ARTCC–

(See AIR ROUTE TRAFFIC CONTROL CENTER.)

ASDA–

(See ACCELERATE-STOP DISTANCE AVAILABLE.)

ASDA [ICAO]–

(See ICAO Term ACCELERATE-STOP DISTANCE AVAILABLE.)

ASDE–

(See AIRPORT SURFACE DETECTION EQUIPMENT.)

ASF–

(See AIRPORT STREAM FILTER.)

ASLAR–

(See AIRCRAFT SURGE LAUNCH AND RECOVERY.)

ASP–

(See ARRIVAL SEQUENCING PROGRAM.)

ASR–

(See AIRPORT SURVEILLANCE RADAR.)

ASR APPROACH–

(See SURVEILLANCE APPROACH.)

ASSOCIATED– A radar target displaying a data block with flight identification and altitude information.

(See UNASSOCIATED.)

ATC–

(See AIR TRAFFIC CONTROL.)

ATC ADVISES– Used to prefix a message of noncontrol information when it is relayed to an aircraft by other than an air traffic controller.

(See ADVISORY.)

ATC ASSIGNED AIRSPACE– Airspace of defined vertical/lateral limits, assigned by ATC, for the purpose of providing air traffic segregation between the specified activities being conducted within the assigned airspace and other IFR air traffic.

(See SPECIAL USE AIRSPACE.)

ATC CLEARANCE–

(See AIR TRAFFIC CLEARANCE.)

ATC CLEARS– Used to prefix an ATC clearance when it is relayed to an aircraft by other than an air traffic controller.

ATC INSTRUCTIONS– Directives issued by air traffic control for the purpose of requiring a pilot to take specific actions; e.g., “Turn left heading two five zero,” “Go around,” “Clear the runway.”

(Refer to 14 CFR Part 91.)

ATC PREFERRED ROUTE NOTIFICATION– EDST notification to the appropriate controller of the need to determine if an ATC preferred route needs to be applied, based on destination airport.

(See ROUTE ACTION NOTIFICATION.)

(See EN ROUTE DECISION SUPPORT TOOL.)

ATC PREFERRED ROUTES– Preferred routes that are not automatically applied by Host.

ATC REQUESTS– Used to prefix an ATC request when it is relayed to an aircraft by other than an air traffic controller.

ATC SECURITY SERVICES– Communications and security tracking provided by an ATC facility in

support of the DHS, the DOD, or other Federal security elements in the interest of national security. Such security services are only applicable within designated areas. ATC security services do not include ATC basic radar services or flight following.

ATC SECURITY SERVICES POSITION– The position responsible for providing ATC security services as defined. This position does not provide ATC, IFR separation, or VFR flight following services, but is responsible for providing security services in an area comprising airspace assigned to one or more ATC operating sectors. This position may be combined with control positions.

ATC SECURITY TRACKING– The continuous tracking of aircraft movement by an ATC facility in support of the DHS, the DOD, or other security elements for national security using radar (i.e., radar tracking) or other means (e.g., manual tracking) without providing basic radar services (including traffic advisories) or other ATC services not defined in this section.

ATS SURVEILLANCE SERVICE [ICAO]– A term used to indicate a service provided directly by means of an ATS surveillance system.

ATC SURVEILLANCE SOURCE– Used by ATC for establishing identification, control and separation using a target depicted on an air traffic control facility's video display that has met the relevant safety standards for operational use and received from one, or a combination, of the following surveillance sources:

- a. Radar (See RADAR.)
- b. ADS-B (See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST.)
- c. WAM (See WIDE AREA MULTILATERATION.)
(See INTERROGATOR.)
(See TRANSPONDER.)
(See ICAO term RADAR.)
(Refer to AIM.)

ATS SURVEILLANCE SYSTEM [ICAO]– A generic term meaning variously, ADS-B, PSR, SSR or any comparable ground-based system that enables the identification of aircraft.

Note: A comparable ground-based system is one that has been demonstrated, by comparative assessment or other methodology, to have a level of safety and performance equal to or better than monopulse SSR.

ATCAA–
(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.)

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 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 WEATHER SERVICE– A service provided by the National Weather Service (NWS) and FAA which collects and disseminates pertinent weather information for pilots, aircraft operators, and ATC. Available aviation weather reports and forecasts are displayed at each NWS office and FAA FSS.

(See TRANSCRIBED WEATHER BROADCAST.)

(See WEATHER ADVISORY.)

(Refer to AIM.)

AWW–

(See SEVERE WEATHER FORECAST
ALERTS.)

B

BACK-TAXI– A term used by air traffic controllers to taxi an aircraft on the runway opposite to the traffic flow. The aircraft may be instructed to back-taxi to the beginning of the runway or at some point before reaching the runway end for the purpose of departure or to exit the runway.

BASE LEG–

(See **TRAFFIC PATTERN**.)

BEACON–

(See **AERONAUTICAL BEACON**.)

(See **AIRPORT ROTATING BEACON**.)

(See **AIRWAY BEACON**.)

(See **MARKER BEACON**.)

(See **NONDIRECTIONAL BEACON**.)

(See **RADAR**.)

BEARING– The horizontal direction to or from any point, usually measured clockwise from true north, magnetic north, or some other reference point through 360 degrees.

(See **NONDIRECTIONAL BEACON**.)

BELOW MINIMUMS– Weather conditions below the minimums prescribed by regulation for the particular action involved; e.g., landing minimums, takeoff minimums.

BLAST FENCE– A barrier that is used to divert or dissipate jet or propeller blast.

BLAST PAD– A surface adjacent to the ends of a runway provided to reduce the erosive effect of jet blast and propeller wash.

BLIND SPEED– The rate of departure or closing of a target relative to the radar antenna at which cancellation of the primary radar target by moving target indicator (MTI) circuits in the radar equipment causes a reduction or complete loss of signal.

(See **ICAO term BLIND VELOCITY**.)

BLIND SPOT– An area from which radio transmissions and/or radar echoes cannot be received. The term is also used to describe portions of the airport not visible from the control tower.

BLIND TRANSMISSION–

(See **TRANSMITTING IN THE BLIND**.)

BLIND VELOCITY [ICAO]– The radial velocity of a moving target such that the target is not seen on primary radars fitted with certain forms of fixed echo suppression.

BLIND ZONE–

(See **BLIND SPOT**.)

BLOCKED– Phraseology used to indicate that a radio transmission has been distorted or interrupted due to multiple simultaneous radio transmissions.

BOTTOM ALTITUDE– In reference to published altitude restrictions on a STAR or STAR runway transition, the lowest altitude authorized.

BOUNDARY LIGHTS–

(See **AIRPORT LIGHTING**.)

BRAKING ACTION (GOOD, GOOD TO MEDIUM, MEDIUM, MEDIUM TO POOR, POOR, OR NIL)– A report of conditions on the airport movement area providing a pilot with a degree/quality of braking to expect. Braking action is reported in terms of good, good to medium, medium, medium to poor, poor, or nil.

(See **RUNWAY CONDITION READING**.)

(See **RUNWAY CONDITION REPORT**.)

(See **RUNWAY CONDITION CODES**.)

BRAKING ACTION ADVISORIES– When tower controllers receive runway braking action reports which include the terms “medium,” “poor,” or “nil,” or whenever weather conditions are conducive to deteriorating or rapidly changing runway braking conditions, the tower will include on the ATIS broadcast the statement, “Braking Action Advisories are in Effect.” During the time braking action advisories are in effect, ATC will issue the most current braking action report for the runway in use to each arriving and departing aircraft. Pilots should be prepared for deteriorating braking conditions and should request current runway condition information if not issued by controllers. Pilots should also be prepared to provide a descriptive runway condition report to controllers after landing.

BREAKOUT– A technique to direct aircraft out of the approach stream. In the context of simultaneous (independent) parallel operations, a breakout is used to direct threatened aircraft away from a deviating aircraft.

BROADCAST– Transmission of information for which an acknowledgement is not expected.

(See ICAO term **BROADCAST**.)

BROADCAST [ICAO]– A transmission of information relating to air navigation that is not addressed to a specific station or stations.

BUFFER AREA– As applied to an MVA or MIA chart, a depicted 3 NM or 5 NM radius MVA/MIA sector isolating a displayed obstacle for which the sector is established. A portion of a buffer area can also be inclusive of a MVA/MIA sector polygon boundary.

COMMON ROUTE– Typically the portion of a RNAV STAR between the en route transition end point and the runway transition start point; however, the common route may only consist of a single point that joins the en route and runway transitions.

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

(See DESIGNATED COMMON TRAFFIC ADVISORY FREQUENCY (CTAF) AREA.)

(Refer to AC 90-66, Non-Towered Airport Flight Operations.)

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

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

(See OUTER MARKER.)

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

(See MIDDLE MARKER.)

(See ICAO term LOCATOR.)

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

COMPLY WITH RESTRICTIONS– An ATC instruction that requires an aircraft being vectored back onto an arrival or departure procedure to comply with all altitude and/or speed restrictions depicted on the procedure. This term may be used in lieu of repeating each remaining restriction that appears on the procedure.

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

(Refer to AIM.)

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

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

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

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

CONFIDENCE MANEUVER– A confidence maneuver consists of one or more turns, a climb or descent, or other maneuver to determine if the pilot in command (PIC) is able to receive and comply with ATC instructions.

CONFLICT ALERT– A function of certain air traffic control automated systems designed to alert radar controllers to existing or pending situations between tracked targets (known IFR or VFR aircraft) that require his/her immediate attention/action.

(See MODE C INTRUDER ALERT.)

CONFLICT RESOLUTION– The resolution of potential conflicts between aircraft that are radar identified and in communication with ATC by ensuring that radar targets do not touch. Pertinent

traffic advisories shall be issued when this procedure is applied.

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

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

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

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

CONTACT–

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

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

(See CONTACT APPROACH.)

(See RADAR CONTACT.)

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

(Refer to AIM.)

CONTAMINATED RUNWAY– A runway is considered contaminated whenever standing water, ice, snow, slush, frost in any form, heavy rubber, or other substances are present. A runway is contaminated with respect to rubber deposits or other

friction-degrading substances when the average friction value for any 500-foot segment of the runway within the ALD fails below the recommended minimum friction level and the average friction value in the adjacent 500-foot segments falls below the maintenance planning friction level.

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

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

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

(See AIRCRAFT HAZARD AREA.)

(See REFINED HAZARD AREA.)

(See TRANSITIONAL HAZARD AREA.)

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

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

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

(See DISCRETE FREQUENCY.)

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

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

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

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

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

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

2. CLASS B– Generally, that airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of airport operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored and consists of a surface area and two or more layers (some Class B airspace areas resemble upside-down wedding cakes), and is designed to contain all published instrument procedures once an aircraft enters the airspace. An ATC clearance is required for all aircraft to operate in the area, and all aircraft that are so cleared receive separation services within the airspace. The cloud clearance requirement for VFR operations is "clear of clouds."

3. CLASS C– Generally, that airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Although the configuration of each Class C area is individually tailored, the airspace usually consists of a surface area with a 5 NM radius, a circle with a 10 NM radius that extends no lower than 1,200

feet up to 4,000 feet above the airport elevation, and an outer area that is not charted. Each person must establish two-way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while within the airspace. VFR aircraft are only separated from IFR aircraft within the airspace.

(See OUTER AREA.)

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

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

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

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

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

CONTROLLER–

(See **AIR TRAFFIC CONTROL SPECIALIST**.)

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

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

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

(See **AIRMET**.)

(See **AWW**.)

(See **CWA**.)

(See **SIGMET**.)

(Refer to **AIM**.)

CONVECTIVE SIGNIFICANT METEOROLOGICAL INFORMATION–

(See **CONVECTIVE SIGMET**.)

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

(See **AUTOMATIC DEPENDENT SURVEILLANCE-BROADCAST**.)

(See **NON-COOPERATIVE SURVEILLANCE**.)

(See **RADAR**.)

(See **WIDE AREA MULTILATERATION**.)

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

COORDINATION FIX– The fix in relation to which facilities will handoff, transfer control of an aircraft,

or coordinate flight progress data. For terminal facilities, it may also serve as a clearance for arriving aircraft.

COPTER–

(See **HELICOPTER**.)

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

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

COURSE–

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

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

(See **BEARING**.)

(See **INSTRUMENT LANDING SYSTEM**.)

(See **RADIAL**.)

CPDLC–

(See **CONTROLLER PILOT DATA LINK COMMUNICATIONS**.)

CPL [ICAO]–

(See ICAO term **CURRENT FLIGHT PLAN**.)

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

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

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

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.)

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 SPACING PROGRAM (ESP)– A program designed to assist the exit sector in achieving the required in-trail spacing.

EN ROUTE TRANSITION–

a. Conventional STARs/SIDs. The portion of a SID/STAR that connects to one or more en route airway/jet route.

b. RNAV STARs/SIDs. The portion of a STAR preceding the common route or point, or for a SID the portion following, that is coded for a specific en route fix, airway or jet route.

ESP–

(See EN ROUTE SPACING PROGRAM.)

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.

G

GATE HOLD PROCEDURES– Procedures at selected airports to hold aircraft at the gate or other ground location whenever departure delays exceed or are anticipated to exceed 15 minutes. The sequence for departure will be maintained in accordance with initial call-up unless modified by flow control restrictions. Pilots should monitor the ground control/clearance delivery frequency for engine start/taxi advisories or new proposed start/taxi time if the delay changes.

GCA–

(See **GROUND CONTROLLED APPROACH**.)

GDP–

(See **GROUND DELAY PROGRAM**.)

GENERAL AVIATION– That portion of civil aviation that does not include scheduled or unscheduled air carriers or commercial space operations.

(See ICAO term **GENERAL AVIATION**.)

GENERAL AVIATION [ICAO]– All civil aviation operations other than scheduled air services and nonscheduled air transport operations for remuneration or hire.

GEO MAP– The digitized map markings associated with the ASR-9 Radar System.

GLIDEPATH–

(See **GLIDESLOPE**.)

GLIDEPATH [ICAO]– A descent profile determined for vertical guidance during a final approach.

GLIDEPATH INTERCEPT ALTITUDE–

(See **GLIDESLOPE INTERCEPT ALTITUDE**.)

GLIDESLOPE– Provides vertical guidance for aircraft during approach and landing. The glideslope/glidepath is based on the following:

a. Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS; or,

b. Visual ground aids, such as VASI, which provide vertical guidance for a VFR approach or for

the visual portion of an instrument approach and landing.

c. PAR. Used by ATC to inform an aircraft making a PAR approach of its vertical position (elevation) relative to the descent profile.

(See ICAO term **GLIDEPATH**.)

GLIDESLOPE INTERCEPT ALTITUDE– The published minimum altitude to intercept the glideslope in the intermediate segment of an instrument approach. Government charts use the lightning bolt symbol to identify this intercept point. This intersection is called the Precise Final Approach fix (PFAF). ATC directs a higher altitude, the resultant intercept becomes the PFAF.

(See **FINAL APPROACH FIX**.)

(See **SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE**.)

GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS)– GNSS refers collectively to the worldwide positioning, navigation, and timing determination capability available from one or more satellite constellations. A GNSS constellation may be augmented by ground stations and/or geostationary satellites to improve integrity and position accuracy.

(See **GROUND-BASED AUGMENTATION SYSTEM**.)

(See **SATELLITE-BASED AUGMENTATION SYSTEM**.)

GLOBAL NAVIGATION SATELLITE SYSTEM MINIMUM EN ROUTE IFR ALTITUDE (GNSS MEA)– The minimum en route IFR altitude on a published ATS route or route segment which assures acceptable Global Navigation Satellite System reception and meets obstacle clearance requirements. (Refer to 14 CFR Part 91.) (Refer to 14 CFR Part 95.)

GLOBAL POSITIONING SYSTEM (GPS)– GPS refers to the worldwide positioning, navigation and timing determination capability available from the U.S. satellite constellation. The service provided by GPS for civil use is defined in the GPS Standard Positioning System Performance Standard. GPS is composed of space, control, and user elements.

GNSS [ICAO]–

(See GLOBAL NAVIGATION SATELLITE SYSTEM.)

GNSS MEA–

(See GLOBAL NAVIGATION SATELLITE SYSTEM MINIMUM EN ROUTE IFR ALTITUDE.)

GO AHEAD– Proceed with your message. Not to be used for any other purpose.

GO AROUND– Instructions for a pilot to abandon his/her approach to landing. Additional instructions may follow. Unless otherwise advised by ATC, a VFR aircraft or an aircraft conducting visual approach should overfly the runway while climbing to traffic pattern altitude and enter the traffic pattern via the crosswind leg. A pilot on an IFR flight plan making an instrument approach should execute the published missed approach procedure or proceed as instructed by ATC; e.g., “Go around” (additional instructions if required).

(See LOW APPROACH.)

(See MISSED APPROACH.)

GPD–

(See GRAPHIC PLAN DISPLAY.)

GPS–

(See GLOBAL POSITIONING SYSTEM.)

GRAPHIC PLAN DISPLAY (GPD)– A view available with EDST that provides a graphic display of aircraft, traffic, and notification of predicted conflicts. Graphic routes for Current Plans and Trial Plans are displayed upon controller request.

(See EN ROUTE DECISION SUPPORT TOOL.)

GROSS NAVIGATION ERROR (GNE) – A lateral deviation of 10 NM or more from the aircraft’s cleared route.

GROUND BASED AUGMENTATION SYSTEM (GBAS)– A ground based GNSS station which provides local differential corrections, integrity parameters and approach data via VHF data broadcast to GNSS users to meet real-time performance requirements for CAT I precision approaches. The aircraft applies the broadcast data to improve the accuracy and integrity of its GNSS signals and computes the deviations to the selected approach. A single ground station can serve multiple runway ends up to an approximate radius of 23 NM.

GROUND BASED AUGMENTATION SYSTEM (GBAS) LANDING SYSTEM (GLS)– A type of precision IAP based on local augmentation of GNSS data using a single GBAS station to transmit locally corrected GNSS data, integrity parameters and approach information. This improves the accuracy of aircraft GNSS receivers’ signal in space, enabling the pilot to fly a precision approach with much greater flexibility, reliability and complexity. The GLS procedure is published on standard IAP charts, features the title GLS with the designated runway and minima as low as 200 feet DA. Future plans are expected to support Cat II and CAT III operations.

GROUND CLUTTER– A pattern produced on the radar scope by ground returns which may degrade other radar returns in the affected area. The effect of ground clutter is minimized by the use of moving target indicator (MTI) circuits in the radar equipment resulting in a radar presentation which displays only targets which are in motion.

(See CLUTTER.)

GROUND COMMUNICATION OUTLET (GCO)– An unstaffed, remotely controlled, ground/ground communications facility. Pilots at uncontrolled airports may contact ATC and FSS via VHF radio to a telephone connection. If the connection goes to ATC, the pilot can obtain an IFR clearance or close an IFR flight plan. If the connection goes to Flight Service, the pilot can open or close a VFR flight plan; obtain an updated weather briefing prior to takeoff; close an IFR flight plan; or, for Alaska or MEDEVAC only, obtain an IFR clearance. Pilots will use four “key clicks” on the VHF radio to contact the appropriate ATC facility or six “key clicks” to contact the FSS. The GCO system is intended to be used only on the ground.

GROUND CONTROLLED APPROACH– A radar approach system operated from the ground by air traffic control personnel transmitting instructions to the pilot by radio. The approach may be conducted with surveillance radar (ASR) only or with both surveillance and precision approach radar (PAR). Usage of the term “GCA” by pilots is discouraged except when referring to a GCA facility. Pilots should specifically request a “PAR” approach when a precision radar approach is desired or request an “ASR” or “surveillance” approach when a nonprecision radar approach is desired.

(See RADAR APPROACH.)

INCERFA (Uncertainty Phase) [ICAO]– A situation wherein uncertainty exists as to the safety of an aircraft and its occupants.

INCREASED SEPARATION REQUIRED (ISR)– Indicates the confidence level of the track requires 5 NM separation. 3 NM separation, 1 ½ NM separation, and target resolution cannot be used.

INCREASE SPEED TO (SPEED)–
(See **SPEED ADJUSTMENT**.)

INERTIAL NAVIGATION SYSTEM (INS)– An RNAV system which is a form of self-contained navigation.
(See **Area Navigation/RNAV**.)

INFLIGHT REFUELING–
(See **AERIAL REFUELING**.)

INFLIGHT WEATHER ADVISORY–
(See **WEATHER ADVISORY**.)

INFORMATION REQUEST (INREQ)– A request originated by an FSS for information concerning an overdue VFR aircraft.

INITIAL APPROACH FIX (IAF)– The fixes depicted on instrument approach procedure charts that identify the beginning of the initial approach segment(s).
(See **FIX**.)
(See **SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE**.)

INITIAL APPROACH SEGMENT–
(See **SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE**.)

INITIAL APPROACH SEGMENT [ICAO]– That segment of an instrument approach procedure between the initial approach fix and the intermediate approach fix or, where applicable, the final approach fix or point.

INLAND NAVIGATION FACILITY– A navigation aid on a North American Route at which the common route and/or the noncommon route begins or ends.

INNER MARKER– A marker beacon used with an ILS (CAT II) precision approach located between the middle marker and the end of the ILS runway, transmitting a radiation pattern keyed at six dots per second and indicating to the pilot, both aurally and visually, that he/she is at the designated decision height (DH), normally 100 feet above the touchdown

zone elevation, on the ILS CAT II approach. It also marks progress during a CAT III approach.

(See **INSTRUMENT LANDING SYSTEM**.)
(Refer to **AIM**.)

INNER MARKER BEACON–
(See **INNER MARKER**.)

INREQ–
(See **INFORMATION REQUEST**.)

INS–
(See **INERTIAL NAVIGATION SYSTEM**.)

INSTRUMENT APPROACH–
(See **INSTRUMENT APPROACH PROCEDURE**.)

INSTRUMENT APPROACH OPERATIONS [ICAO]– An approach and landing using instruments for navigation guidance based on an instrument approach procedure. There are two methods for executing instrument approach operations:

a. A two-dimensional (2D) instrument approach operation, using lateral navigation guidance only; and

b. A three-dimensional (3D) instrument approach operation, using both lateral and vertical navigation guidance.

Note: Lateral and vertical navigation guidance refers to the guidance provided either by:

- a) a ground-based radio navigation aid; or
- b) computer-generated navigation data from ground-based, space-based, self-contained navigation aids or a combination of these.

(See **ICAO term INSTRUMENT APPROACH PROCEDURE**.)

INSTRUMENT APPROACH PROCEDURE– A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or to a point from which a landing may be made visually. It is prescribed and approved for a specific airport by competent authority.

(See **SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE**.)

(Refer to **14 CFR Part 91**.)

(Refer to **AIM**.)

a. U.S. civil standard instrument approach procedures are approved by the FAA as prescribed under **14 CFR Part 97** and are available for public use.

b. U.S. military standard instrument approach procedures are approved and published by the Department of Defense.

c. Special instrument approach procedures are approved by the FAA for individual operators but are not published in 14 CFR Part 97 for public use.

(See ICAO term INSTRUMENT APPROACH PROCEDURE.)

INSTRUMENT APPROACH PROCEDURE [ICAO]– A series of predetermined maneuvers by reference to flight instruments with specified protection from obstacles from the initial approach fix, or where applicable, from the beginning of a defined arrival route to a point from which a landing can be completed and thereafter, if a landing is not completed, to a position at which holding or en route obstacle clearance criteria apply.

(See ICAO term INSTRUMENT APPROACH OPERATIONS)

INSTRUMENT APPROACH PROCEDURE CHARTS–

(See AERONAUTICAL CHART.)

INSTRUMENT DEPARTURE PROCEDURE (DP)– A preplanned instrument flight rule (IFR) departure procedure published for pilot use, in graphic or textual format, that provides obstruction clearance from the terminal area to the appropriate en route structure. There are two types of DP, Obstacle Departure Procedure (ODP), printed either textually or graphically, and, Standard Instrument Departure (SID), which is always printed graphically.

(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)

(See OBSTACLE DEPARTURE PROCEDURES.)

(See STANDARD INSTRUMENT DEPARTURES.)

(Refer to AIM.)

INSTRUMENT DEPARTURE PROCEDURE (DP) CHARTS–

(See AERONAUTICAL CHART.)

INSTRUMENT FLIGHT RULES (IFR)– Rules governing the procedures for conducting instrument

flight. Also a term used by pilots and controllers to indicate type of flight plan.

(See INSTRUMENT METEOROLOGICAL CONDITIONS.)

(See VISUAL FLIGHT RULES.)

(See VISUAL METEOROLOGICAL CONDITIONS.)

(See ICAO term INSTRUMENT FLIGHT RULES.)

(Refer to AIM.)

INSTRUMENT FLIGHT RULES [ICAO]– A set of rules governing the conduct of flight under instrument meteorological conditions.

INSTRUMENT LANDING SYSTEM (ILS)– A precision instrument approach system which normally consists of the following electronic components and visual aids:

a. Localizer.

(See LOCALIZER.)

b. Glideslope.

(See GLIDESLOPE.)

c. Outer Marker.

(See OUTER MARKER.)

d. Middle Marker.

(See MIDDLE MARKER.)

e. Approach Lights.

(See AIRPORT LIGHTING.)

(Refer to 14 CFR Part 91.)

(Refer to AIM.)

INSTRUMENT METEOROLOGICAL CONDITIONS (IMC)– Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling less than the minima specified for visual meteorological conditions.

(See INSTRUMENT FLIGHT RULES.)

(See VISUAL FLIGHT RULES.)

(See VISUAL METEOROLOGICAL CONDITIONS.)

INSTRUMENT RUNWAY– A runway equipped with electronic and visual navigation aids for which a precision or nonprecision approach procedure having straight-in landing minimums has been approved.

(See ICAO term INSTRUMENT RUNWAY.)

INSTRUMENT RUNWAY [ICAO]– One of the following types of runways intended for the operation of aircraft using instrument approach procedures:

Approaches (SOIA) to parallel runways whose centerlines are separated by less than 3,000 feet and at least 750 feet. NTZ monitoring is required to conduct these approaches.

(See SIMULTANEOUS OFFSET INSTRUMENT APPROACH (SOIA).)

(Refer to AIM.)

LOCALIZER USABLE DISTANCE– The maximum distance from the localizer transmitter at a specified altitude, as verified by flight inspection, at which reliable course information is continuously received.

(Refer to AIM.)

LOCATOR [ICAO]– An LM/MF NDB used as an aid to final approach.

Note: A locator usually has an average radius of rated coverage of between 18.5 and 46.3 km (10 and 25 NM).

LONG RANGE NAVIGATION–

(See LORAN.)

LONGITUDINAL SEPARATION– The longitudinal spacing of aircraft at the same altitude by a minimum distance expressed in units of time or miles.

(See SEPARATION.)

(Refer to AIM.)

LORAN– An electronic navigational system by which hyperbolic lines of position are determined by measuring the difference in the time of reception of synchronized pulse signals from two fixed transmitters. Loran A operates in the 1750-1950 kHz frequency band. Loran C and D operate in the 100-110 kHz frequency band. In 2010, the U.S. Coast Guard terminated all U.S. LORAN-C transmissions.

(Refer to AIM.)

LOST COMMUNICATIONS– Loss of the ability to communicate by radio. Aircraft are sometimes referred to as NORDO (No Radio). Standard pilot procedures are specified in 14 CFR Part 91. Radar controllers issue procedures for pilots to follow in the event of lost communications during a radar approach when weather reports indicate that an aircraft will likely encounter IFR weather conditions during the approach.

(Refer to 14 CFR Part 91.)

(Refer to AIM.)

LOST LINK (LL)– An interruption or loss of the control link, or when the pilot is unable to effect control of the aircraft and, as a result, the UA will perform a predictable or planned maneuver. Loss of command and control link between the Control Station and the aircraft. There are two types of links:

a. An uplink which transmits command instructions to the aircraft, and

b. A downlink which transmits the status of the aircraft and provides situational awareness to the pilot.

LOST LINK PROCEDURE– Preprogrammed or predetermined mitigations to ensure the continued safe operation of the UA in the event of a lost link (LL). In the event positive link cannot be established, flight termination must be implemented.

LOW ALTITUDE AIRWAY STRUCTURE– The network of airways serving aircraft operations up to but not including 18,000 feet MSL.

(See AIRWAY.)

(Refer to AIM.)

LOW ALTITUDE ALERT, CHECK YOUR ALTITUDE IMMEDIATELY–

(See SAFETY ALERT.)

LOW APPROACH– An approach over an airport or runway following an instrument approach or a VFR approach including the go-around maneuver where the pilot intentionally does not make contact with the runway.

(Refer to AIM.)

LOW FREQUENCY (LF)– The frequency band between 30 and 300 kHz.

(Refer to AIM.)

LOCALIZER PERFORMANCE WITH VERTICAL GUIDANCE (LPV)– A type of approach with vertical guidance (APV) based on WAAS, published on RNAV (GPS) approach charts. This procedure takes advantage of the precise lateral guidance available from WAAS. The minima is published as a decision altitude (DA).

LUAW–

(See LINE UP AND WAIT.)

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.)

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.

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 ALTITUDE RESERVATION (STATIONARY ALTRV)– An altitude reservation which encompasses activities in a fixed area. 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.

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.

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.)

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 (TCAN)– 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.

TCAS–

(See **TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM**.)

TCH–

(See **THRESHOLD CROSSING HEIGHT**.)

TCLT–

(See **TENTATIVE CALCULATED LANDING TIME**.)

TDLS–

(See **TERMINAL DATA LINK SYSTEM**.)

TDZE–

(See **TOUCHDOWN ZONE ELEVATION**.)

TEMPORARY FLIGHT RESTRICTION (TFR)– A TFR is a regulatory action issued by the FAA via the U.S. NOTAM System, under the authority of United States Code, Title 49. TFRs are issued within the sovereign airspace of the United States and its

territories to restrict certain aircraft from operating within a defined area on a temporary basis to protect persons or property in the air or on the ground. While not all inclusive, TFRs may be issued for disaster or hazard situations such as: toxic gas leaks or spills, fumes from flammable agents, aircraft accident/incident sites, aviation or ground resources engaged in wildfire suppression, or aircraft relief activities following a disaster. TFRs may also be issued in support of VIP movements, for reasons of national security; or when determined necessary for the management of air traffic in the vicinity of aerial demonstrations or major sporting events. NAS users or other interested parties should contact a FSS for TFR information. Additionally, TFR information can be found in automated briefings, NOTAM publications, and on the internet at <http://www.faa.gov>. The FAA also distributes TFR information to aviation user groups for further dissemination.

TENTATIVE CALCULATED LANDING TIME (TCLT)– A projected time calculated for adapted vertex for each arrival aircraft based upon runway configuration, airport acceptance rate, airport arrival delay period, and other metered arrival aircraft. This time is either the VTA of the aircraft or the TCLT/ACLT of the previous aircraft plus the AAI, whichever is later. This time will be updated in response to an aircraft's progress and its current relationship to other arrivals.

TERMINAL AREA– A general term used to describe airspace in which approach control service or airport traffic control service is provided.

TERMINAL AREA FACILITY– A facility providing air traffic control service for arriving and departing IFR, VFR, Special VFR, and on occasion en route aircraft.

(See **APPROACH CONTROL FACILITY**.)

(See **TOWER**.)

TERMINAL AUTOMATION SYSTEMS (TAS)– TAS is used to identify the numerous automated tracking systems including 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 RADAR SERVICE AREA– Airspace surrounding designated airports wherein ATC provides radar vectoring, sequencing, and separation on a full-time basis for all IFR and participating VFR aircraft. The AIM contains an explanation of TRSA. TRSAs are depicted on VFR aeronautical charts. Pilot participation is urged but is not mandatory.

TERMINAL VFR RADAR SERVICE– A national program instituted to extend the terminal radar services provided instrument flight rules (IFR) aircraft to visual flight rules (VFR) aircraft. The program is divided into four types service referred to as basic radar service, terminal radar service area (TRSA) service, Class B service and Class C service. The type of service provided at a particular location is contained in the Chart Supplement U.S.

a. Basic Radar Service– These services are provided for VFR aircraft by all commissioned terminal radar facilities. Basic radar service includes safety alerts, traffic advisories, limited radar vectoring when requested by the pilot, and sequencing at locations where procedures have been established for this purpose and/or when covered by a letter of agreement. The purpose of this service is to adjust the flow of arriving IFR and VFR aircraft into the traffic pattern in a safe and orderly manner and to provide traffic advisories to departing VFR aircraft.

b. TRSA Service– This service provides, in addition to basic radar service, sequencing of all IFR and participating VFR aircraft to the primary airport and separation between all participating VFR aircraft. The purpose of this service is to provide separation between all participating VFR aircraft and all IFR aircraft operating within the area defined as a TRSA.

c. Class C Service– This service provides, in addition to basic radar service, approved separation between IFR and VFR aircraft, and sequencing of VFR aircraft, and sequencing of VFR arrivals to the primary airport.

d. Class B Service– This service provides, in addition to basic radar service, approved separation

of aircraft based on IFR, VFR, and/or weight, and sequencing of VFR arrivals to the primary airport(s).

(See CONTROLLED AIRSPACE.)

(See TERMINAL RADAR SERVICE AREA.)

(Refer to AIM.)

(Refer to CHART SUPPLEMENT U.S.)

TERMINAL-VERY HIGH FREQUENCY OMNI-DIRECTIONAL RANGE STATION (TVOR)– A very high frequency terminal omnirange station located on or near an airport and used as an approach aid.

(See NAVIGATIONAL AID.)

(See VOR.)

TERRAIN AWARENESS WARNING SYSTEM (TAWS)– An on-board, terrain proximity alerting system providing the aircrew ‘Low Altitude warnings’ to allow immediate pilot action.

TERRAIN FOLLOWING– The flight of a military aircraft maintaining a constant AGL altitude above the terrain or the highest obstruction. The altitude of the aircraft will constantly change with the varying terrain and/or obstruction.

TETRAHEDRON– A device normally located on uncontrolled airports and used as a landing direction indicator. The small end of a tetrahedron points in the direction of landing. At controlled airports, the tetrahedron, if installed, should be disregarded because tower instructions supersede the indicator.

(See SEGMENTED CIRCLE.)

(Refer to AIM.)

TF–

(See TERRAIN FOLLOWING.)

THAT IS CORRECT– The understanding you have is right.

THA–

(See TRANSITIONAL HAZARD AREA.)

THREE-HOUR TARMAC RULE– Rule that relates to Department of Transportation (DOT) requirements placed on airlines when tarmac delays are anticipated to reach 3 hours.

360 OVERHEAD–

(See OVERHEAD MANEUVER.)

THRESHOLD– The beginning of that portion of the runway usable for landing.

(See AIRPORT LIGHTING.)

(See DISPLACED THRESHOLD.)

THRESHOLD CROSSING HEIGHT– The theoretical height above the runway threshold at which the aircraft’s glideslope antenna would be if the aircraft maintains the trajectory established by the mean ILS glideslope or the altitude at which the calculated glidepath of an RNAV or GPS approaches.

(See GLIDESLOPE.)

(See THRESHOLD.)

THRESHOLD LIGHTS–

(See AIRPORT LIGHTING.)

TIE-IN FACILITY– The FSS primarily responsible for providing FSS services, including telecommunications services for landing facilities or navigational aids located within the boundaries of a flight plan area (FPA). Three-letter identifiers are assigned to each FSS/FPA and are annotated as tie-in facilities in the Chart Supplement U.S., the Alaska Supplement, the Pacific Supplement, and FAA Order JO 7350.9, Location Identifiers. Large consolidated FSS facilities may have many tie-in facilities or FSS sectors within one facility.

(See FLIGHT PLAN AREA.)

(See FLIGHT SERVICE STATION.)

TIME-BASED FLOW MANAGEMENT (TBFM)–

The hardware, software, methods, processes, and initiatives to manage air traffic flows based on time to balance air traffic demand with system capacity, and support the management of PBN. This includes, but not limited to, Adjacent Center Metering (ACM), En Route Departure Capability (EDC), Ground-based Interval Management-Spacing (GIM-S), Integrated Departure/Arrival Capability (IDAC), Single Center Metering (SCM), Time-Based Metering (TBM), Time-Based Scheduling (TBS), and Extended/Coupled Metering.

TIME GROUP– Four digits representing the hour and minutes from the Coordinated Universal Time (UTC) clock. FAA uses UTC for all operations. The term “ZULU” may be used to denote UTC. The word “local” or the time zone equivalent shall be used to denote local when local time is given during radio and telephone communications. When written, a time zone designator is used to indicate local time; e.g., “0205M” (Mountain). The local time may be based on the 24-hour clock system. The day begins at 0000 and ends at 2359.

TIS-B–

(See TRAFFIC INFORMATION SERVICE–BROADCAST.)

TMPA–

(See TRAFFIC MANAGEMENT PROGRAM ALERT.)

TMU–

(See TRAFFIC MANAGEMENT UNIT.)

TODA–

(See TAKEOFF DISTANCE AVAILABLE.)

(See ICAO term TAKEOFF DISTANCE AVAILABLE.)

TOI–

(See TRACK OF INTEREST.)

TOP ALTITUDE– In reference to SID published altitude restrictions, the charted “maintain” altitude contained in the procedure description or assigned by ATC.

TORA–

(See TAKEOFF RUN AVAILABLE.)

(See ICAO term TAKEOFF RUN AVAILABLE.)

TORCHING– The burning of fuel at the end of an exhaust pipe or stack of a reciprocating aircraft engine, the result of an excessive richness in the fuel air mixture.

TOS–

(See TRAJECTORY OPTIONS SET)

TOTAL ESTIMATED ELAPSED TIME [ICAO]– For IFR flights, the estimated time required from takeoff to arrive over that designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced, or, if no navigation aid is associated with the destination aerodrome, to arrive over the destination aerodrome. For VFR flights, the estimated time required from takeoff to arrive over the destination aerodrome.

(See ICAO term ESTIMATED ELAPSED TIME.)

TOUCH-AND-GO– An operation by an aircraft that lands and departs on a runway without stopping or exiting the runway.

TOUCH-AND-GO LANDING–

(See TOUCH-AND-GO.)

TOUCHDOWN–

a. The point at which an aircraft first makes contact with the landing surface.

b. Concerning a precision radar approach (PAR), it is the point where the glide path intercepts the landing surface.

(See ICAO term TOUCHDOWN.)

TOUCHDOWN [ICAO]– The point where the nominal glide path intercepts the runway.

Note: Touchdown as defined above is only a datum and is not necessarily the actual point at which the aircraft will touch the runway.

TOUCHDOWN RVR–

(See VISIBILITY.)

TOUCHDOWN ZONE– The first 3,000 feet of the runway beginning at the threshold. The area is used for determination of Touchdown Zone Elevation in the development of straight-in landing minimums for instrument approaches.

(See ICAO term TOUCHDOWN ZONE.)

TOUCHDOWN ZONE [ICAO]– The portion of a runway, beyond the threshold, where it is intended landing aircraft first contact the runway.

TOUCHDOWN ZONE ELEVATION– The highest elevation in the first 3,000 feet of the landing surface. TDZE is indicated on the instrument approach procedure chart when straight-in landing minimums are authorized.

(See TOUCHDOWN ZONE.)

TOUCHDOWN ZONE LIGHTING–

(See AIRPORT LIGHTING.)

TOWER– A terminal facility that uses air/ground communications, visual signaling, and other devices to provide ATC services to aircraft operating in the vicinity of an airport or on the movement area. Authorizes aircraft to land or takeoff at the airport controlled by the tower or to transit the Class D airspace area regardless of flight plan or weather conditions (IFR or VFR). A tower may also provide approach control services (radar or nonradar).

(See AIRPORT TRAFFIC CONTROL SERVICE.)

(See APPROACH CONTROL FACILITY.)

(See APPROACH CONTROL SERVICE.)

(See MOVEMENT AREA.)

(See TOWER EN ROUTE CONTROL SERVICE.)

(See ICAO term AERODROME CONTROL TOWER.)

(Refer to AIM.)

TOWER EN ROUTE CONTROL SERVICE– The control of IFR en route traffic within delegated airspace between two or more adjacent approach control facilities. This service is designed to expedite traffic and reduce control and pilot communication requirements.

TOWER TO TOWER–

(See TOWER EN ROUTE CONTROL SERVICE.)

TRACEABLE PRESSURE STANDARD– The facility station pressure instrument, with certification/calibration traceable to the National Institute of Standards and Technology. Traceable pressure standards may be mercurial barometers, commissioned ASOS or dual transducer AWOS, or portable pressure standards or DASI.

TRACK– The actual flight path of an aircraft over the surface of the earth.

(See COURSE.)

(See FLIGHT PATH.)

(See ROUTE.)

(See ICAO term TRACK.)

TRACK [ICAO]– The projection on the earth's surface of the path of an aircraft, the direction of which path at any point is usually expressed in degrees from North (True, Magnetic, or Grid).

TRACK OF INTEREST (TOI)– Displayed data representing an airborne object that threatens or has the potential to threaten North America or National Security. Indicators may include, but are not limited to: noncompliance with air traffic control instructions or aviation regulations; extended loss of communications; unusual transmissions or unusual flight behavior; unauthorized intrusion into controlled airspace or an ADIZ; noncompliance with issued flight restrictions/security procedures; or unlawful interference with airborne flight crews, up to and including hijack. In certain circumstances, an object may become a TOI based on specific and credible intelligence pertaining to that particular aircraft/object, its passengers, or its cargo.

TRACK OF INTEREST RESOLUTION– A TOI will normally be considered resolved when: the aircraft/object is no longer airborne; the aircraft complies with air traffic control instructions, aviation regulations, and/or issued flight restrictions/security procedures; radio contact is re-established and authorized control of the aircraft is verified; the aircraft is intercepted and intent is verified to be

nonthreatening/nonhostile; TOI was identified based on specific and credible intelligence that was later determined to be invalid or unreliable; or displayed data is identified and characterized as invalid.

TRAFFIC–

a. A term used by a controller to transfer radar identification of an aircraft to another controller for the purpose of coordinating separation action. Traffic is normally issued:

1. In response to a handoff or point out,
2. In anticipation of a handoff or point out, or
3. In conjunction with a request for control of an aircraft.

b. A term used by ATC to refer to one or more aircraft.

TRAFFIC ADVISORIES– Advisories issued to alert pilots to other known or observed air traffic which may be in such proximity to the position or intended route of flight of their aircraft to warrant their attention. Such advisories may be based on:

- a. Visual observation.
- b. Observation of radar identified and nonidentified aircraft targets on an ATC radar display, or
- c. Verbal reports from pilots or other facilities.

Note 1: The word “traffic” followed by additional information, if known, is used to provide such advisories; e.g., “Traffic, 2 o’clock, one zero miles, southbound, eight thousand.”

Note 2: Traffic advisory service will be provided to the extent possible depending on higher priority duties of the controller or other limitations; e.g., radar limitations, volume of traffic, frequency congestion, or controller workload. Radar/nonradar traffic advisories do not relieve the pilot of his/her responsibility to see and avoid other aircraft. Pilots are cautioned that there are many times when the controller is not able to give traffic advisories concerning all traffic in the aircraft’s proximity; in other words, when a pilot requests or is receiving traffic advisories, he/she should not assume that all traffic will be issued.

(Refer to AIM.)

TRAFFIC ALERT (aircraft call sign), TURN (left/right) IMMEDIATELY, (climb/descend) AND MAINTAIN (altitude).

(See SAFETY ALERT.)

TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM (TCAS)– An airborne collision

avoidance system based on radar beacon signals which operates independent of ground-based equipment. TCAS-I generates traffic advisories only. TCAS-II generates traffic advisories, and resolution (collision avoidance) advisories in the vertical plane.

TRAFFIC INFORMATION–

(See TRAFFIC ADVISORIES.)

TRAFFIC INFORMATION SERVICE–BROADCAST (TIS-B)– The broadcast of ATC derived traffic information to ADS-B equipped (1090ES or UAT) aircraft. The source of this traffic information is derived from ground-based air traffic surveillance sensors, typically from radar targets. TIS-B service will be available throughout the NAS where there are both adequate surveillance coverage (radar) and adequate broadcast coverage from ADS-B ground stations. Loss of TIS-B will occur when an aircraft enters an area not covered by the GBT network. If this occurs in an area with adequate surveillance coverage (radar), nearby aircraft that remain within the adequate broadcast coverage (ADS-B) area will view the first aircraft. TIS-B may continue when an aircraft enters an area with inadequate surveillance coverage (radar); nearby aircraft that remain within the adequate broadcast coverage (ADS-B) area will not view the first aircraft.

TRAFFIC IN SIGHT– Used by pilots to inform a controller that previously issued traffic is in sight.

(See NEGATIVE CONTACT.)

(See TRAFFIC ADVISORIES.)

TRAFFIC MANAGEMENT PROGRAM ALERT– A term used in a Notice to Airmen (NOTAM) issued in conjunction with a special traffic management program to alert pilots to the existence of the program and to refer them to a special traffic management program advisory message for program details. The contraction TMPA is used in NOTAM text.

TRAFFIC MANAGEMENT UNIT– The entity in ARTCCs and designated terminals directly involved in the active management of facility traffic. Usually under the direct supervision of an assistant manager for traffic management.

TRAFFIC NO FACTOR– Indicates that the traffic described in a previously issued traffic advisory is no factor.

TRAFFIC NO LONGER OBSERVED– Indicates that the traffic described in a previously issued traffic advisory is no longer depicted on radar, but may still be a factor.

TRAFFIC PATTERN– The traffic flow that is prescribed for aircraft landing at, taxiing on, or taking off from an airport. The components of a typical traffic pattern are upwind leg, crosswind leg, downwind leg, base leg, and final approach.

a. Upwind Leg– A flight path parallel to the landing runway in the direction of landing.

b. Crosswind Leg– A flight path at right angles to the landing runway off its upwind end.

c. Downwind Leg– A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg.

d. Base Leg– A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline.

e. Final Approach– A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. An aircraft making a straight-in approach VFR is also considered to be on final approach.

(See STRAIGHT-IN APPROACH VFR.)

(See TAXI PATTERNS.)

(See ICAO term AERODROME TRAFFIC CIRCUIT.)

(Refer to 14 CFR Part 91.)

(Refer to AIM.)

TRAFFIC SITUATION DISPLAY (TSD)– TSD is a computer system that receives radar track data from all 20 CONUS ARTCCs, organizes this data into a mosaic display, and presents it on a computer screen. The display allows the traffic management coordinator multiple methods of selection and highlighting of individual aircraft or groups of aircraft. The user has the option of superimposing these aircraft positions over any number of background displays. These background options include ARTCC boundaries, any stratum of en route sector boundaries, fixes, airways, military and other special use airspace, airports, and geopolitical boundaries. By using the TSD, a coordinator can monitor any number of traffic situations or the entire systemwide traffic flows.

TRAJECTORY– A EDST representation of the path an aircraft is predicted to fly based upon a Current Plan or Trial Plan.

(See EN ROUTE DECISION SUPPORT TOOL.)

TRAJECTORY MODELING– The automated process of calculating a trajectory.

TRAJECTORY OPTIONS SET (TOS)– A TOS is an electronic message, submitted by the operator, that is used by the Collaborative Trajectory Options Program (CTOP) to manage the airspace captured in the traffic management program. The TOS will allow the operator to express the route and delay trade-off options that they are willing to accept.

TRANSFER OF CONTROL– That action whereby the responsibility for the separation of an aircraft is transferred from one controller to another.

(See ICAO term TRANSFER OF CONTROL.)

TRANSFER OF CONTROL [ICAO]– Transfer of responsibility for providing air traffic control service.

TRANSFERRING CONTROLLER– A controller/facility transferring control of an aircraft to another controller/facility.

(See ICAO term TRANSFERRING UNIT/CONTROLLER.)

TRANSFERRING FACILITY–

(See TRANSFERRING CONTROLLER.)

TRANSFERRING UNIT/CONTROLLER [ICAO]– Air traffic control unit/air traffic controller in the process of transferring the responsibility for providing air traffic control service to an aircraft to the next air traffic control unit/air traffic controller along the route of flight.

Note: See definition of accepting unit/controller.

TRANSITION–

a. The general term that describes the change from one phase of flight or flight condition to another; e.g., transition from en route flight to the approach or transition from instrument flight to visual flight.

b. A published procedure (DP Transition) used to connect the basic DP to one of several en route airways/jet routes, or a published procedure (STAR Transition) used to connect one of several en route airways/jet routes to the basic STAR.

(Refer to DP/STAR Charts.)

TRANSITION POINT– A point at an adapted number of miles from the vertex at which an arrival aircraft would normally commence descent from its en route altitude. This is the first fix adapted on the arrival speed segments.

TRANSITION WAYPOINT– The waypoint that defines the beginning of a runway or en route transition on an RNAV SID or STAR.

TRANSITIONAL AIRSPACE– That portion of controlled airspace wherein aircraft change from one phase of flight or flight condition to another.

TRANSITIONAL HAZARD AREA (THA)– Used by ATC. Airspace normally associated with an Aircraft Hazard Area within which the flight of aircraft is subject to restrictions.

(See AIRCRAFT HAZARD AREA.)

(See CONTINGENCY HAZARD AREA.)

(See REFINED HAZARD AREA.)

TRANSMISSOMETER– An apparatus used to determine visibility by measuring the transmission of light through the atmosphere. It is the measurement source for determining runway visual range (RVR).

(See VISIBILITY.)

TRANSMITTING IN THE BLIND– A transmission from one station to other stations in circumstances where two-way communication cannot be established, but where it is believed that the called stations may be able to receive the transmission.

TRANSPONDER– The airborne radar beacon receiver/transmitter portion of the Air Traffic Control Radar Beacon System (ATCRBS) which automatically receives radio signals from interrogators on the ground, and selectively replies with a specific reply pulse or pulse group only to those interrogations being received on the mode to which it is set to respond.

(See INTERROGATOR.)

(See ICAO term TRANSPONDER.)

(Refer to AIM.)

TRANSPONDER [ICAO]– A receiver/transmitter which will generate a reply signal upon proper interrogation; the interrogation and reply being on different frequencies.

TRANSPONDER CODES–

(See CODES.)

TRANSPONDER OBSERVED – Phraseology used to inform a VFR pilot the aircraft's assigned beacon code and position have been observed. Specifically, this term conveys to a VFR pilot the transponder

reply has been observed and its position correlated for transit through the designated area.

TRIAL PLAN– A proposed amendment which utilizes automation to analyze and display potential conflicts along the predicted trajectory of the selected aircraft.

TRSA–

(See TERMINAL RADAR SERVICE AREA.)

TSD–

(See TRAFFIC SITUATION DISPLAY.)

TURBOJET AIRCRAFT– An aircraft having a jet engine in which the energy of the jet operates a turbine which in turn operates the air compressor.

TURBOPROP AIRCRAFT– An aircraft having a jet engine in which the energy of the jet operates a turbine which drives the propeller.

TURBULENCE– An atmospheric phenomenon that causes changes in aircraft altitude, attitude, and or airspeed with aircraft reaction depending on intensity. Pilots report turbulence intensity according to aircraft's reaction as follows:

a. Light – Causes slight, erratic changes in altitude and or attitude (pitch, roll, or yaw).

b. Moderate– Similar to Light but of greater intensity. Changes in altitude and or attitude occur but the aircraft remains in positive control at all times. It usually causes variations in indicated airspeed.

c. Severe– Causes large, abrupt changes in altitude and or attitude. It usually causes large variations in indicated airspeed. Aircraft may be momentarily out of control.

d. Extreme– The aircraft is violently tossed about and is practically impossible to control. It may cause structural damage.

(See CHOP.)

(Refer to AIM.)

TURN ANTICIPATION– (maneuver anticipation).

TVOR–

(See TERMINAL-VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION.)

TWO-WAY RADIO COMMUNICATIONS FAILURE–

(See LOST COMMUNICATIONS.)

U

UHF–

(See **ULTRAHIGH FREQUENCY**.)

ULTRAHIGH FREQUENCY (UHF)– The frequency band between 300 and 3,000 MHz. The bank of radio frequencies used for military air/ground voice communications. In some instances this may go as low as 225 MHz and still be referred to as UHF.

ULTRALIGHT VEHICLE– A single-occupant aeronautical vehicle operated for sport or recreational purposes which does not require FAA registration, an airworthiness certificate, or pilot certification. Operation of an ultralight vehicle in certain airspace requires authorization from ATC.

(Refer to 14 CFR Part 103.)

UNABLE– Indicates inability to comply with a specific instruction, request, or clearance.

UNASSOCIATED– A radar target that does not display a data block with flight identification and altitude information.

(See **ASSOCIATED**.)

UNCONTROLLED AIRSPACE– Airspace in which aircraft are not subject to controlled airspace (Class A, B, C, D, or E) separation criteria.

UNDER THE HOOD– Indicates that the pilot is using a hood to restrict visibility outside the cockpit while simulating instrument flight. An appropriately rated pilot is required in the other control seat while this operation is being conducted.

(Refer to 14 CFR Part 91.)

UNFROZEN– The Scheduled Time of Arrival (STA) tags, which are still being rescheduled by the time-based flow management (TBFM) calculations. The aircraft will remain unfrozen until the time the corresponding estimated time of arrival (ETA) tag passes the preset freeze horizon for that aircraft's stream class. At this point the automatic rescheduling will stop, and the STA becomes "frozen."

UNICOM– A nongovernment communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOMs are shown on aeronautical charts and publications.

(See **CHART SUPPLEMENT U.S.**)

(Refer to **AIM**.)

UNMANNED AIRCRAFT (UA)– A device used or intended to be used for flight that has no onboard pilot. This device can be any type of airplane, helicopter, airship, or powered-lift aircraft. Unmanned free balloons, moored balloons, tethered aircraft, gliders, and unmanned rockets are not considered to be a UA.

UNMANNED AIRCRAFT SYSTEM (UAS)– An unmanned aircraft and its associated elements related to safe operations, which may include control stations (ground, ship, or air based), control links, support equipment, payloads, flight termination systems, and launch/recovery equipment. It consists of three elements: unmanned aircraft, control station, and data link.

UNPUBLISHED ROUTE– A route for which no minimum altitude is published or charted for pilot use. It may include a direct route between NAVAIDs, a radial, a radar vector, or a final approach course beyond the segments of an instrument approach procedure.

(See **PUBLISHED ROUTE**.)

(See **ROUTE**.)

UNRELIABLE (GPS/WAAS)– An advisory to pilots indicating the expected level of service of the GPS and/or WAAS may not be available. Pilots must then determine the adequacy of the signal for desired use.

UNSERVICEABLE (U/S)

(See **OUT OF SERVICE/UNSERVICEABLE**.)

UPWIND LEG–

(See **TRAFFIC PATTERN**.)

URGENCY– A condition of being concerned about safety and of requiring timely but not immediate assistance; a potential distress condition.

(See **ICAO term URGENCY**.)

URGENCY [ICAO]– A condition concerning the safety of an aircraft or other vehicle, or of person on board or in sight, but which does not require immediate assistance.

USAFIB–

(See **ARMY AVIATION FLIGHT INFORMATION BULLETIN**.)

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BRIEFING GUIDE

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

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1. PARAGRAPH NUMBER AND TITLE: 2-1-28. TCAS RESOLUTION ADVISORIES

2. BACKGROUND: Since FY17, Safety Alerts and Traffic Advisories (SA/TA) have been an ATO Top 5 item. In September 2019, Safety and Technical Training (AJI) hosted a Top 5 Summit to address SA/TA and the other remaining items. Participants at the safety summit determined that FAA Order JO 7110.65, paragraph 2-1-28, TCAS Resolution Advisories, contains guidance that is open to misinterpretation regarding the actions a controller should apply in response to a TCAS resolution advisory.

3. CHANGE:**OLD****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.

Add

Add

NEW**2-1-28. TCAS RESOLUTION ADVISORIES**

No Change

No Change

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.

1. PARAGRAPH NUMBER AND TITLE:

2-4-20. AIRCRAFT IDENTIFICATION

9-2-3. DEPARTMENT OF ENERGY (DOE) SPECIAL FLIGHTS

2. BACKGROUND: AJR-222 conducted discussions with the Department of Energy (DOE) Aviation Office on their use of the R-A-C call sign. Those discussions disclosed that the call sign is no longer used by DOE. DOE recommended AJR-222 contact the Federal Bureau of Investigation and the United States Air Force on their use of the call sign. They advised that they either never used or no longer utilize the R-A-C call sign.

3. CHANGE:

<u>OLD</u>	<u>NEW</u>
2-4-20. AIRCRAFT IDENTIFICATION	2-4-20. AIRCRAFT IDENTIFICATION
Title through <i>TBL 2-4-2</i>	No Change
10. Other Special Flights.	No Change
(a) Department of Energy flights. State the letters “R-A-C” (use phonetic alphabet equivalents) followed by the last 4 separate digits of the aircraft registration number.	Delete
EXAMPLE– <i>“Romeo Alfa Charlie One Six Five Three.”</i>	Delete
a10(b) and a10(c)	Re-letter a10(a) and a10(b)

<u>OLD</u>	<u>NEW</u>
9-2-3. DEPARTMENT OF ENERGY (DOE) SPECIAL FLIGHTS	Delete
a. Provide notification of possible route or altitude changes as far in advance as possible for “RAC” flights. The pilot will indicate if the proposed change is acceptable or if alternate routing or altitude will be requested.	Delete
NOTE– <i>DOE contracts for civil pilots to operate public aircraft to transport radioactive or high explosive materials within the conterminous U.S. These flights operate on an IFR flight plan but principally during daylight hours and VFR conditions. These flights require flight along carefully selected routes and, in some instances, pilots will refuse clearances that require reroute or altitude changes that would derogate their objective.</i>	Delete
b. EN ROUTE. Approve pilot requests to leave center frequency for operational purposes as traffic conditions permit.	Delete
c. Notify a supervisor in the event any of the following occurs with “RAC” aircraft:	Delete
1. Loss of radio contact.	Delete
2. Loss of radar contact.	Delete
3. The flight is overdue at the destination.	Delete
d. If you receive information that a “RAC” aircraft is involved in an accident, secure as much information as possible, particularly with respect to location, and immediately notify the ARTCC supervisory traffic management coordinator-in-charge.	Delete

NOTE-

There is a possibility of an explosive or radiation hazard of an "RAC" aircraft involved in an accident.

Delete

9-2-4 through 9-2-23

Renumber 9-2-3 through 9-2-22

1. PARAGRAPH NUMBER AND TITLE: 9-2-13. LAW ENFORCEMENT OPERATIONS BY CIVIL AND MILITARY ORGANIZATIONS

2. BACKGROUND: This Document Change Proposal (DCP) deletes obsolete references to law enforcement alerts, the El Paso Intelligence Center (EPIC), and the Transportation Security Administration regarding information pertaining to stolen aircraft. This update to paragraph 9-2-13 directs controllers to notify the Operational Supervisor (OS)/Controller-in-Charge (CIC) when receiving any information pertaining to stolen aircraft. This change also deletes an obsolete reference to FAA Order 1600.29, Law Enforcement Alert Message System, which was cancelled April 20, 2018. In addition to this DCP, additional DCPs are in coordination for JO 7210.3, paragraphs 2-1-36, 2-7-6, and 2-7-7, that harmonize air traffic responsibilities for reporting information pertaining to security situations and suspicious activities to the DEN.

3. CHANGE:

OLD

9-2-13. LAW ENFORCEMENT OPERATIONS BY CIVIL AND MILITARY ORGANIZATIONS

a. Law enforcement alerts.

Add

1. Aircraft lookouts must not be distributed outside the FAA.

REFERENCE-

FAA Order 1600.29, Law Enforcement Alert Message System.
FAA Order JO 7210.3, Para 2-7-7, Cooperation With Law Enforcement Agencies.

2. Stolen aircraft alerts, including stolen aircraft summaries, may be distributed outside the FAA to: airport offices, air carriers, fixed base operators, and law enforcement agencies.

3. Upon receipt of knowledge concerning an aircraft for which a current law enforcement alert message is held, do the following:

(a) Forward any information on the aircraft to El Paso Intelligence Center (EPIC) and the requester when specified in the message.

NEW

9-2-12. LAW ENFORCEMENT OPERATIONS

a. In the event information is received pertaining to stolen aircraft, the controller must forward all information to the OS/CIC for reporting on the Domestic Events Network (DEN).

REFERENCE-

FAA Order JO 7210.3, Para 2-7-7, Cooperation With Law Enforcement Agencies.

Delete

Delete

Delete

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Delete

(b) Immediately notify the cognizant Transportation Security Administration office by the most rapid means.

Delete

(c) DO NOT TAKE ANY OTHER ACTION AFFECTING THE AIRCRAFT, CARGO, CREW, OR PASSENGERS NOT NORMALLY RELATED TO JOB RESPONSIBILITIES.

Delete

b through b2 REFERENCE

No Change

3. Additionally, some departments and agencies that perform special missions have been assigned coded identifiers to permit them to apprise ATC of ongoing mission activities and solicit special air traffic assistance.

No Change

REFERENCE–
FAA Order 7110.67, *Special Aircraft Operations by Law Enforcement/Military Organizations.*

REFERENCE–
FAA Order 7110.67, *Air Traffic Management Security Services for Special Operations.*

NOTE–

As specified in Para 2–1–4, Operational Priority, priority of handling for aircraft operating with coded identifiers will be the same as that afforded to SAR aircraft performing a SAR mission.

No Change

1. PARAGRAPH NUMBER AND TITLE:

10–1–1. EMERGENCY DETERMINATIONS

10–1–2. OBTAINING INFORMATION

10–2–1. INFORMATION REQUIREMENTS

10–2–5. EMERGENCY SITUATIONS

10–2–15. EMERGENCY AIRPORT RECOMMENDATION

2. BACKGROUND: Airborne technology has been developed that, in the event of a pilot incapacitation, will alert the controller of an emergency situation, select a suitable airport, navigate to that airport, land, and shut down the engine(s). Or, in situations where hypoxic conditions may exist, the system will descend the aircraft to a lower altitude to allow the pilot(s) to recover.

3. CHANGE:

OLD

10–1–1. EMERGENCY DETERMINATIONS

Title through b

c. If the words “Mayday” or “Pan–Pan” are not used and you are in doubt that a situation constitutes an emergency or potential emergency, handle it as though it were an emergency.

NEW

10–1–1. EMERGENCY DETERMINATIONS

No Change

c. If the words “Mayday” or “Pan–Pan” are not used but you believe an emergency or an urgent situation exists, handle it as though it were an emergency.

OLD**10-1-2. OBTAINING INFORMATION**

Obtain enough information to handle the emergency intelligently. Base your decision as to what type of assistance is needed on information and requests received from the pilot because he/she is authorized by 14 CFR Part 91 to determine a course of action.

Add

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OLD**10-2-1. INFORMATION REQUIREMENTS**

Title through a3

b. After initiating action, obtain the following items or any other pertinent information from the pilot or aircraft operator, as necessary:

NEW**10-1-2. OBTAINING INFORMATION**

Delete

a. Use the information provided or solicit more information as necessary to assist the distressed aircraft. Provide assistance that is consistent with the requests of the pilot. If you believe an alternative course of action may prove more beneficial, transmit your recommendation(s) to the pilot.

REFERENCE-

14 CFR § 91.3 Responsibilities and authority of pilot in command.

b. If an emergency was declared by an Emergency Autoland system, the aircraft may transmit the following:

1. Callsign.

2. That Emergency Autoland has been activated.

3. Position (mileage and direction) relative to a nearby airport.

4. The intended emergency landing airport and the planned landing runway.

5. An ETE to the emergency landing airport.

EXAMPLE-

"Aircraft, N123B, pilot incapacitation, 12 miles southwest of KOJC, landing KIXD airport. Emergency Autoland in 13 minutes on runway 36."

NOTE-

1. System configurations may vary between manufacturers. All systems should be configured to transmit enough information for the controller to respond effectively to the emergency.

2. In the event of frequency congestion, an Emergency Autoland system may transmit on 121.5 or CTAF instead of the last assigned ATC frequency.

NEW**10-2-1. INFORMATION REQUIREMENTS**

No Change

No Change

Add

Add

NOTE-

Normally, do not request this information from military fighter-type aircraft that are at low altitudes (i.e., on approach, immediately after departure, on a low level route, etc.). 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.

OLD**10-2-5. EMERGENCY SITUATIONS**

Consider that an aircraft emergency exists and inform the RCC or ARTCC when any of the following exist:

NOTE-

USAF facilities are only required to notify the ARTCC.

- a. An emergency is declared by either:

a1 through a3

Add

OLD**10-2-15. EMERGENCY AIRPORT RECOMMENDATION**

Title through a6

7. Vectoring or homing capability to the emergency airport.

Add

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.

NEW**10-2-5. EMERGENCY SITUATIONS**

Consider that an aircraft emergency exists and inform the RCC or ARTCC **if**:

No Change

- a. An emergency is declared by **any of the following**:

No Change

4. A system-generated transmission from an aircraft.

NEW**10-2-15. EMERGENCY AIRPORT RECOMMENDATION**

No Change

No Change

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.