**CHANGE**

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

**JO 7110.65Y**
**CHG 2**

**Effective Date:**
July 16, 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 Retain this transmittal until superseded by a new basic order.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.

ANGELA RENEE MCCULLOUGH Digitally signed by ANGELA RENEE MCCULLOUGH Date: 2020.06.08 12:38:11 -04'00'

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Date: 6/8/2020

Distribution: ZAT-710, ZAT-464

Initiated By: AJV-0
Vice President, Mission Support Services

# Explanation of Changes
# Change 2

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

**a. 1–2–6. ABBREVIATIONS**
**2–1–4. OPERATIONAL PRIORITY**
**2–3–2. EN ROUTE DATA ENTRIES**
**4–2–5. ROUTE OR ALTITUDE AMENDMENTS**

This change removes all references of the High Altitude Redesign (HAR) Program, from both paragraphs and tables.

**b. 2–1–4. OPERATIONAL PRIORITY**

This change clarifies use of the term "MEDEVAC" when used in radio transmissions and eliminates the reference to "MEDEVAC" as a call sign. The paragraph is re–formatted in bullet form to improve organization and clarity. The original NOTE is deleted and incorporated into the paragraph. Also, two new NOTES are added that provide clarity for the use of MEDEVAC, AIR EVAC, and HOSP in flight plans. In addition, a reference is added for FAA Order JO 7110.65, paragraph 2–4–20, Aircraft Identification. This change cancels and incorporates N JO 7110.774, which was effective April 20, 2020 with a delayed implementation.

**c. 2–1–25. WHEELS DOWN CHECK**

This change removes the United States Air Force (USAF) from this requirement.

**d. 2–1–29. RVSM OPERATIONS**

This addition clarifies that aircraft are allowed to remain in RVSM airspace after the loss of a transponder or Mode C altitude reporting capability.

**e. 2–6–4. ISSUING WEATHER AND CHAFF AREAS**

This change adds a note to the paragraph to provide clarity and to emphasize the intent of the paragraph, which is that controllers must ensure pilots are advised of weather that could affect their route of flight.

**f. 2–9–3. CONTENT**

This change moves ATIS weather content that was originally under paragraph 2–9–3a5 (Instrument Approach in use), including the associated note and reference, into paragraph 2–9–3a4(d) (Weather information consisting of). It removes the sentence from paragraph 2–9–3a5 "Temperature and dew point should be reported from certified direct reading sensors when available," because the Air Traffic Manager is responsible for ensuring that the appropriate equipment is available and that it is used properly. General clarifications and edits are made throughout the paragraph.

**g. 3–3–6. ARRESTING SYSTEM OPERATION**

This change removes all mention of the discontinued Notices to Airmen Publication (NTAP).

**h. 5–1–3. ATC SURVEILLANCE SOURCE USE**
**5–5–4. MINIMA**

This change deletes the constraints against using ADS–B surveillance data for 3 NM separation in ERAM. This change cancels and incorporates N JO 7110.773, which was effective April 16, 2020.

**i. 13–1–1. DESCRIPTION**

This change revises wording within paragraph 13–1–1 and changes the title of Chapter 13, Section 1 to remove confusion about the acronym EDST (En Route Decision Support). The format of the Section 1 title is changed to become similar to the format of the title of Section 2.

**j. Editorial Changes**

There are five significant editorial changes, including a change from ARTS to STARS; moving a portion of paragraph 8–9–3 into paragraph 8–10–3; a fix to an example in paragraph 4–3–3; changes to paragraphs 2–1–4, 2–4–20, and 9–2–18; and a removal of a reference to JO 7200.23A from paragraph 2–1–22. Some additional minor editorial changes include fixing broken links, an incorrect

reference to paragraph 10–2–10, and additional reference corrections throughout.

**k. 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–8–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–8–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.)

## 1–2–4. REFERENCES

As used in this order, references direct attention to an additional or supporting source of information such as FAA, NWS, and other agencies' orders, directives, notices, CFRs, and Advisory Circulars (ACs).

## 1–2–5. ANNOTATIONS

Revised, reprinted, or new pages are marked as follows:

**a.** The change number and the effective date are printed on each revised or additional page.

**b.** A page that does not require a change is reprinted in its original form.

**c.** Bold vertical lines in the margin of changed pages indicate the location of substantive revisions to the order. Bold vertical lines adjacent to the title of a chapter, section, or paragraph means that extensive changes have been made to that chapter, section, or paragraph.

**d.** Paragraphs/sections annotated with *EN ROUTE, OCEANIC,* or *TERMINAL* are only to be applied by the designated type facility. When they are not so designated, the paragraphs/sections apply to all types of facilities (en route, oceanic, and terminal).

**e.** The annotation, *USAF* for the U.S. Air Force, *USN* for the U.S. Navy, and *USA* for the U.S. Army denotes that the procedure immediately following the annotation applies only to the designated service.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–12, Military Procedures.*

**f. WAKE TURBULENCE APPLICATION** inserted within a paragraph means that the remaining information in the paragraph requires the application of wake turbulence procedures.

**g.** The annotation ***PHRASEOLOGY*** denotes the prescribed words and/or phrases to be used in communications.

***NOTE–***
*Controllers may, after first using the prescribed phraseology for a specific procedure, rephrase the message to ensure the content is understood. Good judgment must be exercised when using nonstandard phraseology.*

**h.** The annotation ***EXAMPLE*** provides a sample of the way the prescribed phraseology associated with the preceding paragraph(s) will be used. If the preceding paragraph(s) does (do) not include specific prescribed phraseology, the ***EXAMPLE*** merely denotes suggested words and/or phrases that may be used in communications.

***NOTE–***
*The use of the exact text contained in an example not preceded with specific prescribed phraseology is not mandatory. However, the words and/or phrases are expected, to the extent practical, to approximate those used in the example.*

## 1–2–6. ABBREVIATIONS

As used in this order, the abbreviations listed below have the following meanings indicated. (See TBL 1–2–1.)

***TBL 1–2–1***
**FAA Order JO 7110.65 Abbreviations**

| Abbreviation | Meaning |
|---|---|
| AAR . . . . . | Airport acceptance rate |
| AC . . . . . | Advisory Circular |
| ACC . . . . . | Area Control Center |
| ACE–IDS . . . | ASOS Controller Equipment– Information Display System |
| ACL . . . . . | Aircraft list |
| ACLS . . . . . | Automatic Carrier Landing System |
| ADC . . . . . | Aerospace Defense Command |
| ADIZ . . . . . | Air Defense Identification Zone (to be pronounced "AY DIZ") |
| ADS . . . . . | Automatic Dependent Surveillance |
| ADS–B . . . . . | Automatic Dependent Surveillance Broadcast |
| ADS–C . . . . . | Automatic Dependent Surveillance Contract |
| AERT . . . . . | Automation Embedded Route Text |
| AFP . . . . . | Airspace Flow Program |
| AIDC . . . . . | ATS Interfacility Data Communications |
| AIM . . . . . | Aeronautical Information Manual |
| AIRMET . . . | Airmen's meteorological information |
| ALDARS . . . | Automated Lightning Detection and Reporting System |
| ALERFA . . . | Alert phase code (Alerting Service) |
| ALNOT . . . . | Alert notice |
| ALS . . . . . | Approach Light System |
| ALTRV . . . . . | Altitude reservation |

| Abbreviation | Meaning |
|---|---|
| AMASS .... | Airport Movement Area Safety System |
| AMB ..... | Ambiguity–A disparity greater than 2 miles exists between the position declared for a target by STARS and another facility's computer declared position during interfacility handoff |
| AMVER .... | Automated Mutual Assistance Vessel Rescue System |
| ANG ..... | Air National Guard |
| APR ..... | ATC preferred route |
| APREQ .... | Approval Request |
| ARAC ..... | Army Radar Approach Control facility (US Army) |
| ARINC ..... | Aeronautical Radio Incorporated |
| ARIP ..... | Air refueling initial point |
| ARSR ..... | Air route surveillance radar |
| ARTCC ..... | Air Route Traffic Control Center |
| ASD ..... | Aircraft Situation Display |
| ASDE ..... | Airport surface detection equipment |
| ASDE–X ... | Airport Surface Detection Equipment System – Model X |
| ASF ..... | Airport Stream Filters |
| ASOS ..... | Automated Surface Observing System |
| ASR ..... | Airport surveillance radar |
| ASSC ..... | Airport Surface Surveillance Capability |
| ATC ..... | Air traffic control |
| ATCAA .... | ATC assigned airspace |
| ATCSCC .... | David J. Hurley Air Traffic Control System Command Center |
| ATD ..... | Along–Track Distance |
| ATIS ..... | Automatic Terminal Information Service |
| ATO ..... | Air Traffic Organization |
| ATO COO .. | Air Traffic Organization Chief Operating Officer |
| ATOP ..... | Advanced Technologies and Oceanic Procedures |
| ATS ..... | Air Traffic Service |
| AWOS ..... | Automated Weather Observing System |
| BAASS ..... | Bigelow Aerospace Advanced Space Studies |
| BASE ..... | Cloud base |
| CA ..... | Conflict Alert |
| CARCAH ... | Chief, Aerial Reconnaissance Coordination, All Hurricanes |
| CARF ..... | Central Altitude Reservation Function |
| CAT ..... | Clear air turbulence |
| CDT ..... | Controlled departure time |

| Abbreviation | Meaning |
|---|---|
| CEP ..... | Central East Pacific |
| CERAP ..... | Combined Center/RAPCON |
| CFR ..... | Code of Federal Regulations |
| CFR ..... | Call for Release |
| CIC ..... | Controller–in–Charge |
| CNS ..... | Continuous |
| CPDLC ..... | Controller Pilot Data Link Communications |
| CPME ..... | Calibration Performance Monitor Equipment |
| CTA ..... | Control Area |
| CTRD ..... | Certified Tower Radar Display |
| CVFP ..... | Charted Visual Flight Procedure |
| CWA ..... | Center Weather Advisory |
| DETRESFA . | Distress Phase code (Alerting Service) |
| DH ..... | Decision height |
| DL ..... | Departure List |
| DME ..... | Distance measuring equipment compatible with TACAN |
| DOE ..... | Department of Energy |
| DP ..... | Instrument Departure Procedure |
| DR ..... | Dead reckoning |
| DRT ..... | Diversion recovery tool |
| DSR ..... | Display System Replacement |
| DTAS ..... | Digital Terminal Automation Systems |
| DTM ..... | Digital Terrain Map |
| DVFR ..... | Defense Visual Flight Rules |
| DVRSN .... | Diversion |
| EA ..... | Electronic Attack |
| EAS ..... | En Route Automation System |
| EBUS ..... | Enhanced Backup Surveillance System |
| EDCT ..... | Expect Departure Clearance Time |
| EDST ..... | En Route Decision Support Tool |
| EFC ..... | Expect further clearance |
| EFVS ..... | Enhanced Flight Vision System |
| ELDB ..... | Enhanced Limited Data Block |
| ELP ..... | Emergency Landing Pattern |
| ELT ..... | Emergency locator transmitter |
| EoR ..... | Established on RNP |
| EOVM ..... | Emergency obstruction video map |
| EOS ..... | End Service |
| ERAM ..... | En Route Automation Modernization |
| ERIDS ..... | En Route Information Display System |
| ETA ..... | Estimated time of arrival |

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

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

| Abbreviation | Meaning |
|---|---|
| NOTAM . . . . | Notice to Airmen |
| NOWGT . . . . | No weight. The weight class or wake category has not been determined |
| NRP . . . . . | North American Route Program |
| NRR . . . . . | Nonrestrictive Route |
| NRS . . . . . | Navigation Reference System |
| NTZ . . . . . | No transgression zone |
| NWS . . . . . | National Weather Service |
| NWSOP . . . . | National Winter Storm Operations Plan |
| ODALS . . . . | Omnidirectional Approach Lighting System |
| ODP . . . . . | Obstacle Departure Procedure |
| OID . . . . . | Operator Interface Device |
| OS . . . . . | Operations Supervisor |
| OTR . . . . . | Oceanic transition route |
| PAPI . . . . . | Precision Approach Path Indicators |
| PAR . . . . . | Precision approach radar |
| PAR . . . . . | Preferred arrival route |
| PBCT . . . . . | Proposed boundary crossing time |
| P/CG . . . . . | Pilot/Controller Glossary |
| PDAR . . . . . | Preferential departure arrival route |
| PDC . . . . . | Pre−Departure Clearance |
| PDR . . . . . | Preferential departure route |
| PPI . . . . . | Plan position indicator |
| PTP . . . . . | Point−to−point |
| PVD . . . . . | Plan view display |
| RA . . . . . | Radar Associate |
| RAIL . . . . . | Runway alignment indicator lights |
| RAPCON . . . | Radar Approach Control facility (USAF, USN and USMC) |
| RATCF . . . . . | Radar Air Traffic Control Facility (USN and USMC) |
| RBS . . . . . | Radar bomb scoring |
| RCC . . . . . | Rescue Coordination Center |
| RCLS . . . . . | Runway Centerline System |
| RCR . . . . . | Runway condition reading |
| RE . . . . . | Recent (used to qualify weather phenomena such as rain, e.g. recent rain = RERA) |
| REIL . . . . . | Runway end identifier lights |
| RF . . . . . | Radius−to−Fix |
| RNAV . . . . . | Area navigation |
| RNP . . . . . | Required Navigation Performance |
| RTQC . . . . . | Real−Time Quality Control |
| RVR . . . . . | Runway visual range |
| RVSM . . . . . | Reduced Vertical Separation Minimum |
| RwyCC . . . . . | Runway Condition Codes |
| RwyCR . . . . . | Runway Condition Report |
| SAA . . . . . | Special Activity Airspace |
| SAR . . . . . | Search and rescue |
| SATCOM . . . | Satellite Communication |
| SDP . . . . . | Surveillance Data Processing |
| SELCAL . . . . | Selective Calling System |
| SFA . . . . . | Single frequency approach |
| SFO . . . . . | Simulated flameout |
| SID . . . . . | Standard Instrument Departure |
| SIGMET . . . . | Significant meteorological information |
| SPA . . . . . | Special Posting Area |
| SPECI . . . . . | Nonroutine (Special) Aviation Weather Report |
| STAR . . . . . | Standard terminal arrival |
| STARS . . . . . | Standard Terminal Automation Replacement System |
| STMC . . . . . | Supervisory Traffic Management Coordinator |
| STMCIC . . . . | Supervisory Traffic Management Coordinator−in−charge |
| STOL . . . . . | Short takeoff and landing |
| SURPIC . . . . | Surface Picture |
| SVFR . . . . . | Special Visual Flight Rules |
| TAA . . . . . | Terminal arrival area |
| TAS . . . . . | Terminal Automation Systems |
| TACAN . . . . | TACAN UHF navigational aid (omnidirectional course and distance information) |
| TAWS . . . . . | Terrain Awareness Warning System |
| TCAS . . . . . | Traffic Alert and Collision Avoidance System |
| TCDD . . . . . | Tower cab digital display |
| TDLS . . . . . | Terminal Data Link System |
| TDW . . . . . | Tower display workstation |
| TDWR . . . . . | Terminal Doppler Weather Radar |
| TDZL . . . . . | Touchdown Zone Light System |
| TF . . . . . | Track−to−Fix |
| TFMS . . . . . | Traffic Flow Management System |
| TMC . . . . . | Traffic Management Coordinator |
| TMU . . . . . | Traffic Management Unit |
| TRACON . . . | Terminal Radar Approach Control |
| TRSA . . . . . | Terminal radar service area |
| UFO . . . . . | Unidentified flying object |

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

# Chapter 2. General Control

## Section 1. General

### 2–1–1. ATC SERVICE

**a.** The primary purpose of the ATC system is to prevent a collision involving aircraft operating in the system.

**b.** In addition to its primary purpose, the ATC system also:

**1.** Provides a safe, orderly, and expeditious flow of air traffic.

**2.** Supports National Security and Homeland Defense missions.

**c.** The ATC system must provide certain additional services to the extent permitted. The provision of additional services is not optional on the part of the controller, but rather required when the work situation permits. It is recognized that the provision of these services may be precluded by various factors, including, but not limited to:

**1.** Volume of traffic.

**2.** Frequency congestion.

**3.** Quality of surveillance.

**4.** Controller workload.

**5.** Higher priority duties.

**6.** The physical inability to scan and detect situations falling in this category.

**d.** Controllers must provide air traffic control service in accordance with the procedures and minima in this order, except when one or more of the following conditions exists:

**1.** A deviation is necessary to conform with ICAO Documents, National Rules of the Air, or special agreements where the U.S. provides air traffic control service in airspace outside the U.S. and its possessions or:

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

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

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

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

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

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–6, Safety Alert.*
*FAA Order JO 7110.65, Chapter 10, Emergencies.*
*FAA Order JO 7110.65, Para 5–1–8, Merging Target Procedures.*

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

***NOTE–***
**1.** *This does not prohibit ATC from providing services to civil and public UAS.*

**2.** *The provisions of this paragraph apply to model aircraft operating at any altitude. For all other UAS, this paragraph applies only to those UAS operating entirely at or below 400ft AGL.*

***REFERENCE–***
*P/CG Term – Model Aircraft.*

### 2–1–2. DUTY PRIORITY

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

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

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

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

***REFERENCE–***
*FAA Order JO 7610.4 Special Operations.*

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

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

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

## 2–1–3. PROCEDURAL PREFERENCE

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

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

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

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

## 2–1–4. OPERATIONAL PRIORITY

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

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

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

***REFERENCE–***
*14 CFR Section 91.113(c).*

**b.** Treat air ambulance flights as follows:

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

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

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

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

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

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

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

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

***NOTE–***
*As used herein the terms presidential aircraft and*

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

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–4–20, Aircraft Identification.*
*FAA Order JO 7110.65, Para 4–3–2, Departure Clearances.*
*FAA Order JO 7210.3, Para 5–1–1, Advance Coordination.*

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

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

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

**f.** Provide priority handling to NIGHT WATCH 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 9–2–6, FLYNET.*
*FAA Order JO 7610.4, Para 12–4–1, "FLYNET" Flights, Nuclear Emergency Teams.*

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

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

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

***REFERENCE–***
*FAA Order JO 7110.65, Para 9–2–18, SAMP Flights.*
*FAA Order JO 7210.3, Para 5–3–4, 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 9–2–20, Weather Reconnaissance Flights.*

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

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

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

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

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

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

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

**n.** IFR aircraft must have priority over SVFR aircraft.

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

**o.** Aircraft operating under the North American Route Program (NRP) 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 9−2−14, Military Aerial Refueling.*

## 2−1−12. MILITARY PROCEDURES

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

**a.** ATC facilities operated by that military service.

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

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

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

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

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

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

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

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

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

## 2–1–13. FORMATION FLIGHTS

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

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

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

**1.** Requested by any participating pilot.

**2.** All participating pilots concur.

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

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

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

*If affirmative:*

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

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

***REFERENCE–***
*P/CG Term – Formation Flight*

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

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

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

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

***EXAMPLE–***
*"N123JP squawk standby."*

*Or*

*"N123SP have N123JP squawk standby."*

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

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

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

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

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

**e.** Military and civil formation flights in RVSM airspace.

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

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

**3.** If aircraft are requesting to form a formation flight to FL 290 or above, the controller who issues the clearance creating the formation flight is responsible for ensuring that the proper equipment suffix is entered for the lead aircraft.

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

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

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

## 2–1–14. COORDINATE USE OF AIRSPACE

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

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

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

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

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–15, Control Transfer.*
*FAA Order JO 7110.65, Para 5–5–10, Adjacent Airspace.*
*FAA Order JO 7110.65, Para5–4–5 , Transferring Controller Handoff.*
*FAA Order JO 7110.65, Para 5–4–6, Receiving Controller Handoff.*

## 2–1–15. CONTROL TRANSFER

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

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

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

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

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

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

## 2–1–16. SURFACE AREAS

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

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

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

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

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

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

## 2–1–17. RADIO COMMUNICATIONS

**a.** Transfer radio communications before an aircraft enters the receiving controller's area of jurisdiction unless otherwise coordinated or specified by a letter of agreement or a facility directive.

**b.** Transfer radio communications by specifying the following:

***NOTE–***
*Radio communications transfer procedures may be specified by a letter of agreement or contained in the route description of an MTR as published in the DOD Planning AP/1B (AP/3).*

**1.** The facility name or location name and terminal function to be contacted. *TERMINAL*: Omit the location name when transferring communications to another controller within your facility, or, when the tower and TRACON share the same name (for example, Phoenix Tower and Phoenix TRACON).

*EXCEPTION*. Controllers must include the name of the facility when instructing an aircraft to change frequency for final approach guidance.

**2.** Frequency to use except the following may be omitted:

**(a)** FSS frequency.

**(b)** Departure frequency if previously given or published on a SID chart for the procedure issued.

**(c)** *TERMINAL:*

**(1)** Ground or local control frequency if in your opinion the pilot knows which frequency is in use.

**(2)** The numbers preceding the decimal point if the ground control frequency is in the 121 MHz bandwidth.

***EXAMPLE–***
*"Contact Tower."*
*"Contact Ground."*
*"Contact Ground Point Seven."*
*"Contact Ground, One Two Zero Point Eight."*
*"Contact Huntington Radio."*
*"Contact Departure."*
*"Contact Los Angeles Center, One Two Three Point Four."*

**3.** Time, fix, altitude, or specifically when to contact a facility. You may omit this when compliance is expected upon receipt.

***NOTE–***
*AIM, Paragraph 5–3–1, ARTCC Communications, informs pilots that they are expected to maintain a listening watch on the transferring controller's frequency until the time, fix, or altitude specified.*

***PHRASEOLOGY–***
*CONTACT (facility name or location name and terminal function), (frequency).*

*If required,*

*AT (time, fix, or altitude).*

**c.** Controllers must, within a reasonable amount of time, take appropriate action to establish/restore communications with all aircraft for which a communications transfer or initial contact to his/her sector is expected/required.

***NOTE–***
*For the purposes of this paragraph, a reasonable amount of time is considered to be 5 minutes from the time the aircraft enters the controller's area of jurisdiction or comes within range of radio/communications coverage. Communications include two–way VHF or UHF radio contact, data link, or high frequency (HF) radio through an approved third–party provider such as ARINC.*

**d.** ERAM facilities, beginning with initial audio contact with an aircraft, must utilize the voice communication indicator to reflect the current status of voice communications.

**e.** In situations where an operational advantage will be gained, and following coordination with the receiving controller, you may instruct aircraft on the ground to monitor the receiving controller's frequency.

***EXAMPLE–***
*"Monitor Tower."*
*"Monitor Ground."*
*"Monitor Ground Point Seven."*
*"Monitor Ground, One Two Zero Point Eight."*

**f.** In situations where a sector has multiple frequencies or when sectors are combined using multiple frequencies and the aircraft will remain under your jurisdiction, transfer radio communication by specifying the following:

***PHRASEOLOGY–***
*(Identification) CHANGE TO MY FREQUENCY (state frequency).*

***EXAMPLE–***
*"United two twenty-two change to my frequency one two three point four."*

***REFERENCE–***
*AIM, Para 4–2–3, Contact Procedures.*

**g.** Avoid issuing a frequency change to helicopters known to be single-piloted during air-taxiing, hovering, or low-level flight. Whenever possible, relay necessary control instructions until the pilot is able to change frequency.

***NOTE–***
*Most light helicopters are flown by one pilot and require the constant use of both hands and feet to maintain control.*

*Although Flight Control Friction Devices assist the pilot, changing frequency near the ground could result in inadvertent ground contact and consequent loss of control. Pilots are expected to advise ATC of their single-pilot status if unable to comply with a frequency change.*

***REFERENCE–***
*AIM, Para 4–3–14, Communications.*

**h.** In situations where the controller does not want the pilot to change frequency but the pilot is expecting or may want a frequency change, use the following phraseology.

***PHRASEOLOGY–***
*REMAIN THIS FREQUENCY.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–7–1, Clearance Information.*
*FAA Order JO 7110.65, Para 5–12–9, Communication Transfer.*

## 2–1–18. OPERATIONAL REQUESTS

Respond to a request from another controller, a pilot or vehicle operator by one of the following verbal means:

**a.** Restate the request in complete or abbreviated terms followed by the word "APPROVED." The phraseology "APPROVED AS REQUESTED" may be substituted in lieu of a lengthy readback.

***PHRASEOLOGY–***
*(Requested operation) APPROVED.*

*or*

*APPROVED AS REQUESTED.*

**b.** State restrictions followed by the word "APPROVED."

***PHRASEOLOGY–***
*(Restriction and/or additional instructions, requested operation) APPROVED.*

**c.** State the word "UNABLE" and, time permitting, a reason.

***PHRASEOLOGY–***
*UNABLE (requested operation).*

*and when necessary,*

*(reason and/or additional instructions.)*

**d.** State the words "STAND BY."

***NOTE–***
*"STAND BY" is not an approval or denial. The controller acknowledges the request and will respond at a later time.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–21, Traffic Advisories.*
*FAA Order JO 7110.65, Para 4–2–5, Route or Altitude Amendments.*
*FAA Order JO 7110.65, Para 7–9–3, Methods.*

## 2–1–19. WAKE TURBULENCE

**a.** Apply wake turbulence procedures to an aircraft operating behind another aircraft when wake turbulence separation is required.

***NOTE–***
*Para 5–5–4, Minima, subparagraphs g and h specify the required radar wake turbulence separations. Time-based separations are contained in Para 3–9–6, Same Runway Separation, Para 3–9–7, Wake Turbulence Separation for Intersection Departures, Para 3–9–8, Intersecting Runway Separation, Para 3–9–9, Nonintersecting Converging Runway Operations, Para 3–10–3, Same Runway Separation, Para 3–10–4, Intersecting Runway Separation, Para 6–1–4, Adjacent Airport Operation, Para 6–1–5, Arrival Minima, and Para 6–7–5, Interval Minima.*

**b.** The separation minima must continue to touchdown for all IFR aircraft not making a visual approach or maintaining visual separation.

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

## 2–1–20. WAKE TURBULENCE CAUTIONARY ADVISORIES

**a.** Issue wake turbulence cautionary advisories including the position, altitude if known, and direction of flight to aircraft operating behind an aircraft that requires wake turbulence separation when:

***REFERENCE–***
*AC 90–23, Aircraft Wake Turbulence, Pilot Responsibility, Para 11*
*FAA Order JO 7110.65, Para 5–5–4, Minima, subpara g*

**1.** *TERMINAL.* VFR aircraft not being radar vectored are behind the larger aircraft.

**2.** IFR aircraft accept a visual approach or visual separation.

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

**3.** *TERMINAL.* VFR arriving aircraft that have previously been radar vectored and the vectoring has been discontinued.

**b.** Issue cautionary information to any aircraft if in your opinion, wake turbulence may have an adverse effect on it. When traffic is known to be a Super aircraft, include the word *Super* in the description.

When traffic is known to be a Heavy aircraft, include the word *Heavy* in the description.

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

***REFERENCE–***
*AC 90–23, Aircraft Wake Turbulence.*
*P/CG Term– Aircraft Classes.*
*P/CG Term– Wake Turbulence.*

***PHRASEOLOGY–***
*CAUTION WAKE TURBULENCE (traffic information).*

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

## 2–1–21. TRAFFIC ADVISORIES

Unless an aircraft is operating within Class A airspace or omission is requested by the pilot, issue traffic advisories to all aircraft (IFR or VFR) on your frequency when, in your judgment, their proximity may diminish to less than the applicable separation minima. Where no separation minima applies, such as for VFR aircraft outside of Class B/Class C airspace, or a TRSA, issue traffic advisories to those aircraft on your frequency when in your judgment their proximity warrants it. Provide this service as follows:

**a.** To radar identified aircraft:

**1.** Azimuth from aircraft in terms of the 12–hour clock, or

**2.** When rapidly maneuvering aircraft prevent accurate issuance of traffic as in 1 above, specify the direction from an aircraft's position in terms of the eight cardinal compass points (N, NE, E, SE, S, SW, W, and NW). This method must be terminated at the pilot's request.

**3.** Distance from aircraft in miles.

**4.** Direction in which traffic is proceeding and/or relative movement of traffic.

***NOTE–***
*Relative movement includes closing, converging, parallel same direction, opposite direction, diverging, overtaking, crossing left to right, crossing right to left.*

**5.** If known, type of aircraft and altitude.

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

***PHRASEOLOGY–***
*TRAFFIC, (number) O'CLOCK,*

*or when appropriate,*

*(direction) (number) MILES, (direction)–BOUND and/or (relative movement),*

*and if known,*

*(type of aircraft and altitude).*

*or*

*When appropriate,*

*(type of aircraft and relative position), (number of feet) FEET ABOVE/BELOW YOU.*

*If altitude is unknown,*

*ALTITUDE UNKNOWN.*

***EXAMPLE–***
*"Traffic, eleven o'clock, one zero miles, southbound, converging, Boeing Seven Twenty Seven, one seven thousand."*
*"Traffic, twelve o'clock, one five miles, opposite direction, altitude unknown."*
*"Traffic, ten o'clock, one two miles, southeast bound, one thousand feet below you."*

**6.** When requested by the pilot, issue radar vectors to assist in avoiding the traffic, provided the aircraft to be vectored is within your area of jurisdiction or coordination has been effected with the sector/facility in whose area the aircraft is operating.

**7.** If unable to provide vector service, inform the pilot.

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

**8.** Inform the pilot of the following when traffic you have issued is not reported in sight:

**(a)** The traffic is no factor.

**(b)** The traffic is no longer depicted on radar.

***PHRASEOLOGY–***
*TRAFFIC NO FACTOR/NO LONGER OBSERVED,*

*or*

*(number) O'CLOCK TRAFFIC NO FACTOR/NO LONGER OBSERVED,*

*or*

*(direction) TRAFFIC NO FACTOR/NO LONGER OBSERVED.*

**b.** To aircraft that are not radar identified:

**1.** Distance and direction from fix.

**2.** Direction in which traffic is proceeding.

**3.** If known, type of aircraft and altitude.

**4.** ETA over the fix the aircraft is approaching, if appropriate.

***PHRASEOLOGY–***
*TRAFFIC, (number) MILES/MINUTES (direction) OF (airport or fix), (direction)–BOUND,*

*and if known,*

*(type of aircraft and altitude),*

*ESTIMATED (fix) (time),*

*or*

*TRAFFIC, NUMEROUS AIRCRAFT VICINITY (location).*

*If altitude is unknown,*

*ALTITUDE UNKNOWN.*

***EXAMPLE–***
*"Traffic, one zero miles east of Forsythe V–O–R, Southbound, M–D Eighty, descending to one six thousand."*
*"Traffic, reported one zero miles west of Downey V–O–R, northbound, Apache, altitude unknown, estimated Joliet V–O–R one three one five."*
*"Traffic, eight minutes west of Chicago Heights V–O–R, westbound, Mooney, eight thousand, estimated Joliet V–O–R two zero three five."*
*"Traffic, numerous aircraft, vicinity of Delia airport."*

**c.** For aircraft displaying Mode C, not radar identified, issue indicated altitude.

***EXAMPLE–***
*"Traffic, one o'clock, six miles, eastbound, altitude indicates six thousand five hundred."*

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–1–6, Traffic Information.*
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*
*FAA Order JO 7110.65, Para 7–6–10, VFR Departure Information.*

## 2–1–22. UNMANNED AIRCRAFT SYSTEM (UAS) ACTIVITY INFORMATION.

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

***EXAMPLE–***
*"U–A–S activity, 12 o'clock, 1 mile, southbound, quad copter, 400 feet and below."*
*"Unmanned aircraft system activity, 2 miles east of Brandywine Airport, 300 feet and below."*

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

***EXAMPLE–***
*"U–A–S activity reported, 12 o'clock, 1 mile, altitude reported one thousand two hundred."*
*"Unmanned aircraft system activity observed, 1 mile east of Trenton Airport, altitude unknown."*

## 2–1–23. BIRD ACTIVITY INFORMATION

**a.** Issue advisory information on pilot-reported, tower-observed, or radar-observed and pilot-verified bird activity. Include position, species or size of birds, if known, course of flight, and altitude. Do this for at least 15 minutes after receipt of such information from pilots or from adjacent facilities unless visual observation or subsequent reports reveal the activity is no longer a factor.

***EXAMPLE–***
*"Flock of geese, one o'clock, seven miles, northbound, last reported at four thousand."*
*"Flock of small birds, southbound along Mohawk River, last reported at three thousand."*
*"Numerous flocks of ducks, vicinity Lake Winnebago, altitude unknown."*

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

## 2–1–24. TRANSFER OF POSITION RESPONSIBILITY

The transfer of position responsibility must be accomplished in accordance with the "Standard Operating Practice (SOP) for the Transfer of Position

Responsibility," and appropriate facility directives each time operational responsibility for a position is transferred from one specialist to another.

## 2–1–25. WHEELS DOWN CHECK

*USA/USN*

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

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

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

***PHRASEOLOGY–***
*CHECK WHEELS DOWN.*

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

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

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

***PHRASEOLOGY–***
*WHEELS SHOULD BE DOWN.*

## 2–1–26. SUPERVISORY NOTIFICATION

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

**a.** Weather.

**b.** Equipment status.

**c.** Potential sector overload.

**d.** Emergency situations.

**e.** Special flights/operations.

**f.** 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 8020.11, Aircraft Accident and Incident Notification, Investigation, and Reporting, Para 84, Pilot Deviations.*

## 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.

**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 6–3–3, 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.

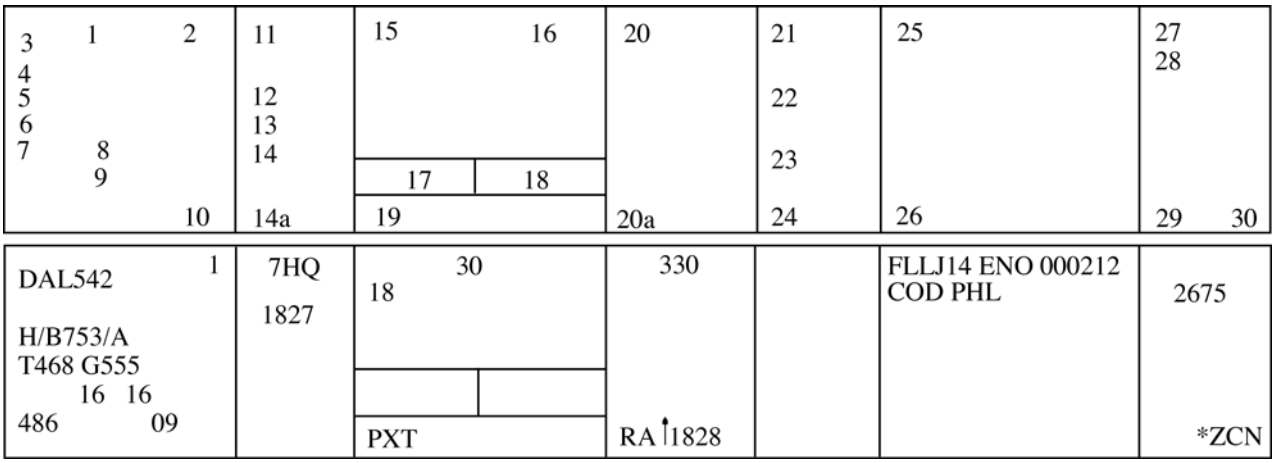
**(2)** Error messages.

**(3)** Rejection messages.

## 2–3–2. EN ROUTE DATA ENTRIES

*FIG 2–3–2*

**Flight Progress Strip**
**(7230–19)**




**a.** Information recorded on the flight progress strips (FAA Forms 7230–19) must be entered in the correspondingly numbered spaces:

*TBL 2–3–1*

| Block | Information Recorded |
|---|---|
| 1. | Verification symbol if required. |
| 2. | Revision number.<br>DSR–Not used. |
| 3. | Aircraft identification. |
| 4. | Number of aircraft if more than one, heavy aircraft indicator "H/" if appropriate, type of aircraft, and aircraft equipment suffix. |
| 5. | Filed true airspeed. |
| 6. | Sector number. |
| 7. | Computer identification number if required. |
| 8. | Estimated ground speed. |
| 9. | Revised ground speed or strip request (SR) originator. |
| 10. | Strip number.<br>DSR– Strip number/Revision number. |
| 11. | Previous fix. |
| 12. | Estimated time over previous fix. |
| 13. | Revised estimated time over previous fix. |
| 14. | Actual time over previous fix, or actual departure time entered on first fix posting after departure. |
| 14a. | Plus time expressed in minutes from the previous fix to the posted fix. |
| 15. | Center–estimated time over fix (in hours and minutes), or clearance information for departing aircraft. |
| 16. | Arrows to indicate if aircraft is departing (↑) or arriving (↓). |
| 17. | Pilot–estimated time over fix. |
| 18. | Actual time over fix, time leaving holding fix, arrival time at nonapproach control airport, or symbol indicating cancellation of IFR flight plan for arriving aircraft, or departure time (actual or assumed). |
| 19. | Fix. For departing aircraft, add proposed departure time. |
| 20. | Altitude information (in hundreds of feet) or as noted below. |
| ***NOTE–*** | *Altitude information may be written in thousands of feet provided the procedure is authorized by the facility manager, and is defined in a facility directive, i.e. FL 330 as 33, 5,000 feet as 5, and 2,800 as 2.8.* |

| Block | Information Recorded |
|---|---|
| 20a. | **OPTIONAL USE,** when voice recorders are operational;<br>**REQUIRED USE,** when the voice recorders are not operating and strips are being use at the facility. This space is used to record reported RA events. The letters RA followed by a climb or descent arrow (if the climb or descent action is reported) and the time (hhmm) the event is reported. |
| 21. | Next posted fix or coordination fix. |
| 22. | Pilot's estimated time over next fix. |
| 23. | Arrows to indicate north (↑), south (↓), east (→), or west (←) direction of flight if required. |
| 24. | Requested altitude. |
| ***NOTE–*** | *Altitude information may be written in thousands of feet provided the procedure is authorized by the facility manager, and is defined in a facility directive, i.e., FL 330 as 33, 5,000 feet as 5, and 2,800 as 2.8.* |
| 25. | Point of origin, route as required for control and data relay, and destination. |
| 26. | Pertinent remarks, minimum fuel, point out/radar vector/speed adjustment information or sector/position number (when applicable in accordance with para 2–2–1, Recording Information), or NRP. |
| 27. | Mode 3/A beacon code if applicable. |
| 28. | Miscellaneous control data (expected further clearance time, time cleared for approach, etc.). |
| 29–30. | Transfer of control data and coordination indicators. |

**b.** Latitude/longitude coordinates may be used to define waypoints and may be substituted for nonadapted NAVAIDs in space 25 of domestic en route flight progress strips provided it is necessary to accommodate a random RNAV or GNSS route request.

**c.** Facility air traffic managers may authorize the optional use of spaces 13, 14, 14a, 22, 23, 24, and 28 for point out information, radar vector information, speed adjustment information, or transfer of control data.

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

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

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

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

**(c)** USAF aircraft engaged in aerial sampling/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 9–2–18, 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

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

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

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

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

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

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

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

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

***REFERENCE–***
*AIM, Paragraph 7–1–14, ATC Inflight Weather Avoidance Assistance.*

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

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

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

**1.** LIGHT.

**2.** MODERATE.

**3.** HEAVY.

**4.** EXTREME.

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

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

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

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

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

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

**1.** Level 1 = LIGHT

**2.** Level 2 = MODERATE

**3.** Levels 3 and 4 = HEAVY

**4.** Levels 5 and 6 = EXTREME

**e.** When precipitation intensity information is not available.

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

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

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

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

**1.** Describe the lowest displayable precipitation intensity as MODERATE.

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

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

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

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

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

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

**1.** An approval for lateral deviation authorizes the pilot to maneuver left or right within the limits of the lateral deviation area.

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

**2.** When approving a weather deviation for an aircraft that had previously been issued a crossing altitude, including climb via or descend via clearances, issue an altitude to maintain 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 7–1–9.*

**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.*

# Section 9. Automatic Terminal Information Service Procedures

## 2–9–1. APPLICATION

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

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

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

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

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

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

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

## 2–9–2. OPERATING PROCEDURES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## 2–9–3. CONTENT

**a.** Include the following in ATIS broadcast as appropriate:

**1.** Airport/facility name.

**2.** Phonetic letter code.

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

**4.** Weather information consisting of:

**(a)** Wind direction and velocity.

**(b)** Visibility.

**(c)** Obstructions to vision.

**(d)** Present weather consisting of: sky condition, temperature, dew point, altimeter, a density altitude advisory when appropriate, and other pertinent remarks included in the official weather observation. Always include weather observation remarks of lightning, cumulonimbus, and towering cumulus clouds.

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

***REFERENCE–***
*FAA Order JO 7900.5, Surface Weather Observing Table 3–2.*
*FAA Order JO 7210.3, Para 10–2–1, Position Duties and Responsibilities.*

**5.** Instrument approach and runway in use.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

***EXAMPLE–***

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

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

***NOTE–***
*When the escape procedure is complete, the flight crew must advise ATC they are returning to their previously assigned clearance or request further instructions.*

***EXAMPLE–***
*"Denver Tower, United 1154, wind shear escape complete, resuming last assigned heading/(name) DP/clearance."*

Or

*"Denver Tower, United 1154, wind shear escape complete, request further instructions."*

## 3–1–9. USE OF TOWER RADAR DISPLAYS

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

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

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

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

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

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

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–3–2, Primary Radar Identification Methods.*
*FAA Order JO 7110.65, Para 5–3–3, Beacon/ADS–B Identification Methods.*
*FAA Order JO 7110.65, Para 5–3–4, Terminal Automation Systems Identification Methods.*

**2.** To provide aircraft with radar traffic advisories.

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

***PHRASEOLOGY–***
*(Identification), PROCEED (direction)–BOUND, (other instructions or information as necessary),*

*or*

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

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

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

***EXAMPLE–***
*"TURN BASE LEG NOW."*

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

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

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

## 3–1–10. OBSERVED ABNORMALITIES

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

***PHRASEOLOGY–***
*(Item) APPEAR/S (observed condition).*

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

## 3–1–11. SURFACE AREA RESTRICTIONS

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

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

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

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

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

***REFERENCE–***
*FAA Order JO 7210.3, Para 5–4–8, Aerobatic Practice Areas.*

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

## 3–1–12. VISUALLY SCANNING RUNWAYS

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

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

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

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

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

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

## 3–1–14. GROUND OPERATIONS WHEN VOLCANIC ASH IS PRESENT

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

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

**b.** Provide for a rolling takeoff for all departures.

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

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

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

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

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

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

**b.** During the time Braking Action Advisories are in effect, take the following action:

**1.** Issue the latest braking action report for the runway in use to each arriving and departing aircraft early enough to be of benefit to the pilot. When possible, include reports from super or heavy aircraft when the arriving or departing aircraft is a super or heavy.

**2.** If no report has been received for the runway of intended use, issue an advisory to that effect.

***PHRASEOLOGY–***
*NO BRAKING ACTION REPORTS RECEIVED FOR RUNWAY (runway number).*

**3.** Advise the Airport Operator that runway braking action reports of "good to medium," "medium," "medium to poor," "poor," or "nil" have been received.

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

**4.** Solicit PIREPs of runway braking action.

***REFERENCE–***
*FAA Order JO 7110.65, Para, 2–9–3, Content*
*FAA Order JO 7110.65, Para 3–9–1, Departure Information*
*FAA Order JO 7110.65, Para 3–10–1, Landing Information*
*FAA Order JO 7110.65, Para 4–7–12, Airport Conditions*
*FAA Order JO 7110.65, Para 2–6–2, PIREP Solicitation and Dissemination.*

## 3–3–6. ARRESTING SYSTEM OPERATION

**a.** For normal operations, arresting systems remotely controlled by ATC must remain in the retracted or down position.

***NOTE–***
**1.** *USN– Runway Arresting Gear– barriers are not operated by ATC personnel. Readiness/rigging of the equipment is the responsibility of the operations department.*

**2.** *A request to raise a barrier or hook cable means the barrier or cable on the departure end of the runway. If an approach end engagement is required, the pilot or military authority will specifically request that the approach end cable be raised.*

***REFERENCE–***
*FAA Order JO 7610.4, Chapter 9, Section 3. Aircraft Arresting System, Single Frequency Approach (SFA), Simulated Flameout (SFO)/Emergency Landing Pattern (ELP) Operations, Celestial Navigation (CELNAV) Training, Para 9–3–1 through Para 9–3–8.*

**b.** Raise aircraft arresting systems whenever:

**1.** Requested by a pilot.

***NOTE–***
*The standard emergency phraseology for a pilot requesting an arresting system to be raised for immediate engagement is:*

*"BARRIER – BARRIER – BARRIER"*

*or*

*"CABLE – CABLE – CABLE."*

**2.** Requested by military authority; e.g., airfield manager, supervisor of flying, mobile control officer, etc.

***NOTE–***
*USAF. Web barriers at the departure end of the runway may remain in the up position when requested by the senior operational commander. The IFR Enroute Supplement and AP-1 will describe specific barrier configuration. ATC will advise transient aircraft of the barrier configuration using the phraseology in subpara c , below.*

**3.** A military jet aircraft is landing with known or suspected radio failure or conditions (drag chute/hydraulic/electrical failure, etc.) that indicate an arresting system may be needed. Exceptions are authorized for military aircraft which cannot engage an arresting system (C–9, C–141, C–5, T–39, etc.) and should be identified in a letter of agreement and/or appropriate military directive.

**c.** When requested by military authority due to freezing weather conditions or malfunction of the activating mechanism, the barrier/cable may remain in a raised position provided aircraft are advised.

***PHRASEOLOGY–***
*YOUR DEPARTURE/LANDING WILL BE TOWARD/OVER A RAISED BARRIER/CABLE ON RUNWAY (number), (location, distance, as appropriate).*

**d.** Inform civil and U.S. Army aircraft whenever rubber supported cables are in place at the approach end of the landing runway, and include the distance of the cables from the threshold. This information may be omitted if it is published in the Domestic Notices webpage, International Notices webpage, or the DOD FLIP.

***EXAMPLE–***
*"Runway One Four arresting cable one thousand feet from threshold."*

**e.** When arresting system operation has been requested, inform the pilot of the indicated barrier/cable position.

***PHRASEOLOGY–***
*(Identification), BARRIER/CABLE INDICATES UP/DOWN. CLEARED FOR TAKEOFF/TO LAND.*

**f.** Time permitting, advise pilots of the availability of all arresting systems on the runway in question when a pilot requests barrier information.

**g.** If an aircraft engages a raised barrier/cable, initiate crash alarm procedures immediately.

**h.** For preplanned practice engagements not associated with emergencies, crash alarm systems need not be activated if, in accordance with local military operating procedures, all required notifications are made before the practice engagement.

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–7–12, Airport Conditions.*

## 3–3–7. FAR FIELD MONITOR (FFM) REMOTE STATUS UNIT

**a.** To meet the demand for more facilities capable of operating under CAT III weather, Type II equipment is being upgraded to Integrity Level 3. This integrity level will support operations which place a high degree of reliance on ILS guidance for positioning through touchdown.

**b.** Installation of the FFM remote status indicating units is necessary to attain the integrity necessary to meet internationally agreed upon reliability values in support of CAT III operations on Type II ILS equipment. The remote status indicating unit used in conjunction with Type II equipment adds a third integrity test; thereby, producing an approach aid which has integrity capable of providing Level 3 service.

**c.** The remote status sensing unit, when installed in the tower cab, will give immediate indications of localizer out-of-tolerance conditions. The alarm in the FFM remote status sensing unit indicates an inoperative or an out-of-tolerance localizer signal; e.g., the course may have shifted due to equipment malfunction or vehicle/aircraft encroachment into the critical area.

**d.** Operation of the FFM remote sensing unit will be based on the prevailing weather. The FFM remote sensing unit must be operational when the weather is below CAT II ILS minimums.

***REFERENCE–***
*FAA Order 6750.24, Appendix A, Abnormal Checklist*

**e.** When the remote status unit indicates that the localizer FFM is in alarm (aural warning following the preset delay) and:

**1.** The aircraft is outside the middle marker (MM) or in the absence of a MM, ½ mile final, check for encroachment of those portions of the critical area that can be seen from the tower. It is understood that the entire critical area may not be visible due to low ceilings and poor visibility. The check is strictly to determine possible causal factors for the out-of-tolerance situation. If the alarm has not cleared prior to the aircraft's arriving at the MM or in the absence of a MM, ½ mile final, immediately issue an advisory that the FFM remote status sensing unit indicates the localizer is unreliable.

**2.** The aircraft is between the MM or ½ mile final and the inner marker (IM), or if the IM is not installed, the CAT II Missed Approach Point (MAP), immediately issue an advisory that the FFM remote status sensing unit indicates the localizer is unreliable.

***PHRASEOLOGY–***
*CAUTION, MONITOR INDICATES RUNWAY (number) LOCALIZER UNRELIABLE.*

**3.** The aircraft has passed the IM or the CAT II MAP (if the IM is not installed) there is no action requirement. Although the FFM has been modified with filters which dampen the effect of false alarms, you may expect alarms when aircraft are located between the FFM and the localizer antenna either on landing or on takeoff.

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–7–12, Airport Conditions.*

# Section 2. Clearances

## 4–2–1. CLEARANCE ITEMS

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

**a.** Aircraft identification.

**b.** Clearance limit.

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

***PHRASEOLOGY–***
*CLEARED TO (destination) AIRPORT.*

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

***PHRASEOLOGY–***
*CLEARED TO (NAVAID name and type).*

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

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

**c.** Standard Instrument Departure (SID).

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

**e.** Altitude data in the order flown.

**f.** Mach number, if applicable.

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

**1.** Frequency change.

**2.** Transponder change.

**3.** Heading.

**4.** Altimeter setting.

**5.** Traffic information containing an altitude.

**h.** Holding instructions.

**i.** Any special information.

**j.** Frequency and beacon code information.

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

## 4–2–2. CLEARANCE PREFIX

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

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

## 4–2–3. DELIVERY INSTRUCTIONS

Issue specific clearance delivery instructions, if appropriate.

## 4–2–4. CLEARANCE RELAY

Relay clearances verbatim.

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

## 4–2–5. ROUTE OR ALTITUDE AMENDMENTS

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

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

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

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

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

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

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

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

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

**4.** Issue the entire route by stating the amendment.

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

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

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

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

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

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

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

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

*"Climb and maintain Flight Level Two Four Zero."*

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

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

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

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

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

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

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

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

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

**d.** Air traffic control specialists should avoid route and/or altitude changes for aircraft participating in the North American Route Program (NRP) and that are displaying "NRP" in the remarks section of their flight plan.

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

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

## 4–2–6. THROUGH CLEARANCES

You may clear an aircraft through intermediate stops.

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

## 4–2–7. ALTRV CLEARANCE

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

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

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

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

## 4–2–8. IFR–VFR AND VFR–IFR FLIGHTS

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

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

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

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

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

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

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

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

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

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

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

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

## 4–2–9. CLEARANCE ITEMS

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

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

**b.** Obtain necessary information needed to provide IFR service.

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

***NOTE–***
*These procedures do not imply that the processing of*

*airfiles has priority over another ATC duty to be performed.*

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

## 4–2–10. CANCELLATION OF IFR FLIGHT PLAN

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

**1.** Airports with an air/ground communications station:

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

**2.** Airports without an air/ground communications station:

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

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

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

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

***PHRASEOLOGY–***
*(Call sign) IFR CANCELLATION RECEIVED.*

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 9–2–15, Military Operations Above FL 600.*

**b.** The actual departure time or a subsequent strip posting time must be forwarded to the receiving facility unless assumed departure times are agreed upon and that time is within 3 minutes of the actual departure time.

## 4–3–9. VFR RELEASE OF IFR DEPARTURE

When an aircraft which has filed an IFR flight plan requests a VFR departure through a terminal facility, FSS, ARTCC Flight Data Unit, or air/ground communications station:

**a.** After obtaining, if necessary, approval from the facility/sector responsible for issuing the IFR clearance, you may authorize an IFR flight planned aircraft to depart VFR. Inform the pilot of the proper frequency and, if appropriate, where or when to contact the facility responsible for issuing the clearance.

***PHRASEOLOGY–***
*VFR DEPARTURE AUTHORIZED. CONTACT (facility) ON (frequency) AT (location or time if required) FOR CLEARANCE.*

**b.** If the facility/sector responsible for issuing the clearance is unable to issue a clearance, inform the pilot, and suggest that the delay be taken on the ground. If the pilot insists upon taking off VFR and obtaining an IFR clearance in the air, inform the facility/sector holding the flight plan of the pilot's intentions and, if possible, the VFR departure time.

## 4–3–10. FORWARDING DEPARTURE TIMES

*TERMINAL*

Unless alternate procedures are prescribed in a letter of agreement or automatic departure messages are being transmitted between automated facilities, forward departure times to the facility from which you received the clearance and also to the terminal departure controller when that position is involved in the departure sequence.

***NOTE–***
**1.** *Letters of agreement prescribing assumed departure times or mandatory radar handoff procedures are alternatives for providing equivalent procedures.*

**2.** *The letters "DM" flashing in the data block signify unsuccessful transmission of a departure message.*

***EXAMPLE–***
*"Expect visual approach runway two five right, runway two five right I–L–S not operational."*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–7–2, Altimeter Setting Issuance Below Lowest Usable FL.*
*FAA Order JO 7110.65, Para 5–10–2, Approach Information.*
*14 CFR Section 91.129 Operations in Class D Airspace, Subpara (d)(2).*

**e.** *TERMINAL*: If multiple runway transitions are depicted on a STAR procedure, advise pilots of the runway assignment on initial contact or as soon as possible thereafter.

## 4–7–11. ARRIVAL INFORMATION BY APPROACH CONTROL FACILITIES

*TERMINAL*

**a.** Forward the following information to nonapproach control towers soon enough to permit adjustment of the traffic flow or to FSSs soon enough to provide local airport advisory where applicable:

**1.** Aircraft identification.

**2.** Type of aircraft.

**3.** ETA.

**4.** Type of instrument approach procedure the aircraft will execute; or

**5.** For SVFR, the direction from which the aircraft will enter Class B, Class C, Class D, or Class E surface area and any altitude restrictions that were issued; or

**6.** For aircraft executing a contact approach, the position of the aircraft.

***NOTE–***
*Specific time requirements are usually stated in a letter of agreement.*

**b.** Forward the following information to the tower when the tower and TRACON are part of the same facility:

**1.** Aircraft identification.

**2.** Type aircraft if required for separation purposes.

**3.** Type of instrument approach procedure and/or runway if differing from that in use.

***NOTE–***
*The local controller has the responsibility to determine whether or not conditions are adequate for the use of STARS data on the CTRD where a facility directive authorizes its use for the transfer of arrival data.*

***REFERENCE–***
*FAA Order JO 7210.3, Para 12–6–4, Use of STARS Quick Look Functions.*

**c.** Where the collocated or satellite tower has STARS data displayed on its CTRD, the STARS modify or quick look functions may be used to forward arrival data provided that a facility directive at the collocated tower or a letter of agreement with the satellite tower exists which outlines procedures for using STARS for transferring this data.

**d.** Forward the following information to centers:

**1.** Where two or more instrument approach procedures are published for the airport, the particular procedure which an aircraft can expect or that it will be vectored toward the airport for a visual approach.

**2.** Highest altitude being used by the approach control facility at the holding fix.

**3.** Average time interval between successive approaches.

**4.** Arrival time of aircraft over the holding fix or, if control has been transferred to you before an aircraft has reached the fix, a statement or other indication acknowledging receipt of control responsibility.

**5.** Revised EFC if different by 10 minutes or more from that issued by the center.

**6.** Missed approaches if they affect center operations.

**7.** Information relating to an unreported or overdue aircraft.

## 4–7–12. AIRPORT CONDITIONS

**a.** *EN ROUTE.* Before issuing an approach clearance, and subsequently as changes occur, inform an aircraft of any abnormal operation of approach and landing aids and of destination airport conditions that you know of which might restrict an approach or landing. This information may be omitted if it is contained in the ATIS broadcast and the pilot states that he/she has received the appropriate ATIS code.

***NOTE–***
**1.** *Airport conditions information, in the provision of en route approach control service, does not include the following:*

*a. The airport surface environment other than the landing area(s) (e.g. TAXIWAY, APRON or SERVICE keyword NOTAMs).*

*b. Obstruction information (e.g. OBST NOTAMs) for aircraft that will be cleared for an instrument approach.*

*c. Information pertaining to cold temperature compensation.*

**2.** *When advised of special use airspace (SUA) or military training route (MTR) activation, appropriate action is taken to separate nonparticipating IFR aircraft from those activities when required, and/or to issue applicable advisories as warranted. When meeting this requirement, there is no requirement for controllers to additionally issue the associated D NOTAM activating that SUA or MTR to the pilot. Accordingly, D NOTAMs for SUA that contain the accountability codes SUAE, SUAC, and SUAW are not required to be issued.*

**3.** *Although a pilot may have obtained NOTAM information during pre−flight briefings, airport conditions may have changed in flight. Therefore a pilot stating, or a controller asking, if they "have the NOTAMS" does not relieve the controller of the responsibility of issuing airport conditions that might restrict an approach or landing. Additionally, controller instructions to contact FSS to obtain the NOTAMs does not relieve the controller of their responsibilities specified in this paragraph.*

**b.** *TERMINAL.* On first contact or as soon as possible thereafter, and subsequently as changes occur, inform an aircraft of any abnormal operation of approach and landing aids and of destination airport conditions that you know of which might restrict an approach or landing. This information may be omitted if it is contained in the ATIS broadcast and the pilot states the appropriate ATIS code.

***REFERENCE−***
*FAA Order JO 7110.65, Chapter 3, Section 3, Airport Conditions.*

**c.** Issue RwyCC contained in a FICON NOTAM to aircraft in accordance with one of the following:

**1.** Before or when an approach clearance is issued.

**2.** Before an en route descent clearance is issued.

**3.** *TERMINAL.* Prior to departure.

**4.** As soon as possible after receipt of any subsequent changes in previously issued RwyCC information.

**d.** RwyCC may be issued in lieu of the complete FICON NOTAM. Issue the complete FICON NOTAM upon pilot request, workload permitting.

***EXAMPLE−***
*Boston Runway Two Seven, field condition, three, three, three, one hundred percent, two inches dry snow over compacted snow. Observed at one five three zero zulu.*

***NOTE−***
*RwyCC may be transmitted via the ATIS as prescribed in Paragraphs 2−9−3, Content; 3−3−1, Landing Area Condition; 3−9−1, Departure Information; and 3−10−1, Landing Information.*

**e.** *TERMINAL.* Where RCRs are provided, transmit this information to USAF and ANG aircraft. Issue the RCR to other aircraft upon pilot request.

***NOTE−***
*USAF offices furnish RCR information at airports serving USAF and ANG aircraft.*

***REFERENCE−***
*FAA Order JO 7110.65, Para 2−9−3, Content.*
*FAA Order JO 7110.65, Para 3−3−1, Landing Area Condition.*
*FAA Order JO 7110.65, Para 3−9−1, Departure Information.*
*FAA Order JO 7110.65, Para 3−10−1, Landing Information.*

## 4−7−13. SWITCHING ILS RUNWAYS

*TERMINAL*

When a change is made from one ILS to another at airports equipped with multiple systems which are not used simultaneously, coordinate with the facilities which use the fixes formed by reference to these NAVAIDs.

# Chapter 5. Radar

## Section 1. General

### 5–1–1. PRESENTATION AND EQUIPMENT PERFORMANCE

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

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

### 5–1–2. ALIGNMENT ACCURACY CHECK

*TERMINAL*

**a.** At locations not equipped with Digital Terminal Automation Systems (DTAS), during relief briefing, or as soon as possible after assuming responsibility for a control position, check the operating equipment for alignment accuracy and display acceptability. Recheck periodically throughout the watch.

***REFERENCE–***
*FAA Order JO 7210.3, Chapter 3, Chapter 8, Chapter 9, Chapter 10, and Chapter 11.*
*Comparable Military Directives.*

**1.** Check the alignment of the radar video display by assuring that the video/digital map or overlay is properly aligned with a permanent target of known range and azimuth on the radar display. Where possible, check one permanent target per quadrant.

**2.** Accuracy of the radar video display must be verified for digitized radar systems by using the moving target indicator (MTI) reflectors, fixed location beacon transponders (Parrots), beacon real–time quality control (RTQC) symbols or calibration performance monitor equipment (CPME) beacon targets.

***REFERENCE–***
*FAA Order JO 7210.3, Para 3–7–1, Tolerance for Radar Fix Accuracy.*

**3.** Digital Terminal Automation Systems (DTAS) conduct continuous self–monitoring of alignment accuracy; therefore, controller alignment checks are not required.

### 5–1–3. ATC SURVEILLANCE SOURCE USE

Use approved ATC Surveillance Sources.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–1–4, Beacon Range Accuracy.*
*FAA Order JO 7110.65, Para 5–2–16, Inoperative or Malfunctioning Interrogator.*

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

**1.** In Class A airspace.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–2–17, Failed Transponder in Class A Airspace.*
*14 CFR Section 91.135, Operations in Class A Airspace.*

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

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

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

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

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

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

**(c)** A secondary radar system is the only source of radar data for the area of service. When the system is used for separation, beacon range accuracy is assured, as provided in Paragraph 5–1–4, Beacon Range Accuracy. *TERMINAL.* Advise pilots when these conditions exist.

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

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

**c.** All procedures and requirements relating to ATC services using secondary radar targets apply to ATC services provided to targets derived from ADS-B and WAM.

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

***REFERENCE–***
*FAA Order JO 7110.65, Para4–1–2, Exceptions.*
*FAA Order JO 7110.65, Para 4–4–2, Route Structure Transitions.*
*FAA Order JO 7110.65, Para 5–5–1, Application.*
*FAA Order JO 7110.65, Para 6–5–4, Minima Along Other Than Established Airways or Routes.*
*FAA Order JO 7110.65, Chapter 6, Nonradar.*
*FAA Order JO 7110.65, Para 5–5–4, Minima.*
*FAA Order JO 7210.3, Para 3–6–2, ATC Surveillance Source Use.*

## 5–1–4. BEACON RANGE ACCURACY

**a.** You may use beacon targets for separation purposes if beacon range accuracy is verified by one of the following methods:

***NOTE–***
**1.** *The check for verification of beacon range accuracy accomplished by correlation of beacon and primary radar targets of the same aircraft is not a check of display accuracy. Therefore, it is not necessary that it be done using the same display with which separation is being provided, nor the same targets being separated.*

**2.** *Narrowband and Full Digital Automation Systems: Technical operations personnel verify beacon range accuracy for automated narrowband display equipment and Full Digital Terminal Automation Systems. Consequently, further verification by the controller is unnecessary.*

**1.** Correlate beacon and primary targets of the same aircraft (not necessarily the one being provided separation) to assure that they coincide.

**2.** When beacon and primary targets of the same aircraft do not coincide, correlate them to assure that any beacon displacement agrees with the specified distance and direction for that particular radar system.

**3.** Refer to beacon range monitoring equipment where so installed.

**b.** If beacon range accuracy cannot be verified, you may use beacon targets only for traffic information.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–1–3, ATC Surveillance Source Use.*

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

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

***REFERENCE–***
*FAA Order JO 7610.4, Chapter 2, Section 7, Electronic Attack (EA) and Testing Coordination.*

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

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

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

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

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

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

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

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

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

# Section 2. Beacon/ADS–B Systems

## 5–2–1. ASSIGNMENT CRITERIA

**a.** General.

**1.** Mode 3/A is designated as the common military/civil mode for air traffic control use.

**2.** Make beacon code assignments to only ADS–B and/or transponder–equipped aircraft.

***NOTE–***
*Aircraft equipped with ADS–B are also still required to have an operable transponder. The ATC–assigned code is one of the required message elements of ADS–B Out.*

**b.** Unless otherwise specified in a directive or a letter of agreement, make code assignments to departing, en route, and arriving aircraft in accordance with the procedures specified in this section for the code environment in which you are providing ATC service. Give first preference to the use of discrete codes.

***PHRASEOLOGY–***
*SQUAWK THREE/ALFA (code),*

*or*

*SQUAWK (code).*

***NOTE–***
*A code environment is determined by an operating position's/sector's equipment capability to decode radar beacon targets using either the first and second or all four digits of a beacon code.*

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

## 5–2–2. DISCRETE ENVIRONMENT

**a.** Issue discrete beacon codes assigned by the computer. Computer-assigned codes may be modified as required.

**1.** *TERMINAL.* Aircraft that will remain within the terminal facility's delegated airspace must be assigned a code from the code subset allocated to the terminal facility.

**2.** *TERMINAL.* Unless otherwise specified in a facility directive or a letter of agreement, aircraft that will enter an adjacent STARS facility's delegated airspace must be assigned a beacon code assigned by the ARTCC computer.

***NOTE–***
**1.** *This will provide the adjacent facility advance information on the aircraft and will cause auto-acquisition of the aircraft prior to handoff.*

**2.** *When an IFR aircraft, or a VFR aircraft that has been assigned a beacon code by the ARTCC computer and whose flight plan will terminate in another facility's area, cancels ATC service or does not activate the flight plan, ensure that appropriate action is taken to remove strips (RS message) on that aircraft.*

**b.** Make handoffs to other positions/sectors on the computer-assigned code.

**c.** Coastal facilities accepting "over" traffic that will subsequently be handed-off to an oceanic ARTCC must reassign a new discrete beacon code to an aircraft when it first enters the receiving facility's airspace. The code reassignment must be accomplished by inputting an appropriate message into the computer and issued to the pilot while operating in the first sector/position in the receiving facility's airspace.

***NOTE–***
*Per an agreement between FAA and the Department of Defense, 17 Code subsets in the NBCAP have been reserved for exclusive military use outside NBCAP airspace. To maximize the use of these subsets, they have been allocated to ARTCC's underlying NBCAP airspace that do not abut an oceanic ARTCC's area. To preclude a potential situation where two aircraft might be in the same airspace at the same time on the same discrete code, it is necessary to reassign an aircraft another code as specified in subpara c.*

***REFERENCE–***
*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.*

## 5–2–3. NONDISCRETE ENVIRONMENT

**a.** Assign appropriate nondiscrete beacon codes from the function codes specified in Paragraph 5–2–6, Function Code Assignments.

**b.** Unless otherwise coordinated at the time of handoff, make handoffs to other positions/sectors on an appropriate nondiscrete function code.

***REFERENCE–***
*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.*

## 5–2–4. MIXED ENVIRONMENT

**a.** When discrete beacon code capability does not exist in your area of responsibility, comply with the procedures specified in Paragraph 5–2–3, Nondiscrete Environment.

***NOTE–***
*In a mixed code environment, a situation may exist where a discrete-equipped position/sector exchanges control of aircraft with nondiscrete-equipped facilities or vice versa.*

**b.** When discrete beacon code capability exists in your area of responsibility:

**1.** Comply with the procedures specified in Paragraph 5–2–2, Discrete Environment, and

**2.** Unless otherwise coordinated at the time of handoff, assign aircraft that will enter the area of responsibility of a nondiscrete-equipped position/sector an appropriate nondiscrete function code from the codes specified in Paragraph 5–2–6, Function Code Assignments, prior to initiating a handoff.

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–2–8, IFR-VFR and VFR-IFR Flights.*
*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.*

## 5–2–5. RADAR BEACON CODE CHANGES

Unless otherwise specified in a directive or a letter of agreement or coordinated at the time of handoff, do not request an aircraft to change from the code it was squawking in the transferring facility's area until the aircraft is within your area of responsibility.

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–2–8, IFR-VFR and VFR-IFR Flights.*
*FAA Order JO 7110.65, Para 5–3–3, Beacon/ADS–B Identification Methods.*

## 5–2–6. FUNCTION CODE ASSIGNMENTS

Unless otherwise specified by a directive or a letter of agreement, make nondiscrete code assignments from the following categories:

**a.** Assign codes to departing IFR aircraft as follows:

**1. Code 2000** to an aircraft which will climb to FL 240 or above or to an aircraft which will climb to FL 180 or above 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. The en route code must not be assigned until the aircraft is established in the high altitude sector.

**2. Code 1100** to an aircraft which will remain below FL 240 or below FL 180 as above.

**3.** For handoffs from terminal facilities when so specified in a letter of agreement as follows:

**(a)** Within NBCAP airspace– **Code 0100 to Code 0400** inclusive or any other code authorized by the appropriate service area office.

**(b)** Outside NBCAP airspace– **Code 1000** or one of the codes from **0100 to 0700** inclusive or any other code authorized by the appropriate service area office.

**b.** Assign codes to en route IFR aircraft as follows:

***NOTE–***
**1.** *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.*

**2.** *The provisions of subparas b2(b) and (c) may be modified by facility directive or letter of agreement when operational complexities or simplified sectorization indicate. Letters of agreement are mandatory when the operating sectors of two facilities are not stratified at identical levels. The general concept of utilizing* ***Codes 2100 through 2500*** *within Class A airspace should be adhered to.*

**1.** Aircraft operating below FL 240 or when control is transferred to a controller whose area includes the stratum involved.

**(a) Code 1000** may be assigned to aircraft changing altitudes.

**(b) Code 1100** to an aircraft operating at an assigned altitude below FL 240. Should an additional code be operationally desirable, **Code 1300** must be assigned.

**2.** Aircraft operating at or above FL 240 or when control is transferred to a controller whose area includes the stratum involved.

**(a) Code 2300** may be assigned to aircraft changing altitudes.

**(b) Code 2100** to an aircraft operating at an assigned altitude from FL 240 to FL 330 inclusive. Should an additional code be operationally desirable, **Code 2200** must be assigned.

**(c) Code 2400** to an aircraft operating at an assigned altitude from FL 350 to FL 600 inclusive.

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 Operations Supervisor (OS), 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 J0 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 fire fighting 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 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

interfacility handoffs from TRACONs according to the procedures in Paragraph 5–4–3, Methods, subparagraph a4.

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

**1.** After initial track start or track start from coast is required, or

**2.** During and after the display of a missing, unreasonable, exceptional, or otherwise unreliable Mode C readout indicator.

**c.** Consider an altitude readout valid when:

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

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

*SAY ALTITUDE.*

*or*

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

*SAY FLIGHT LEVEL.*

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

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

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–2–24, Altitude Filters.*
*FAA Order JO 7110.65, Para 5–14–5, Selected Altitude Limits.*

**3.** You have correlated the altitude information in your data block with the validated information in a data block generated in another facility (by verbally coordinating with the other controller) and your readout is exactly the same as the readout in the other data block.

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

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

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

***PHRASEOLOGY–***
*(Location) ALTIMETER (appropriate altimeter), VERIFY ALTITUDE.*

**2.** If the altitude readout continues to be invalid:

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

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

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

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

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

***PHRASEOLOGY–***
*VERIFY USING TWO NINER NINER TWO AS YOUR ALTIMETER SETTING.*

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

*VERIFY FLIGHT LEVEL.*

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

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

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

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

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

## 5–2–19. ALTITUDE CONFIRMATION–MODE C

Request a pilot to confirm assigned altitude on initial contact unless:

***NOTE–***
*For the purpose of this paragraph, "initial contact" means a pilot's first radio contact with each sector/position.*

**a.** The pilot states the assigned altitude, or

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

**c.** The Mode C readout is valid and indicates that the aircraft is established at the assigned altitude, or

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

***PHRASEOLOGY–***
*(In level flight situations),VERIFY AT (altitude/flight level).*

*(In climbing/descending situations),*

*(if aircraft has been assigned an altitude below the lowest useable flight level),*

*VERIFY ASSIGNED ALTITUDE (altitude).*

*or*

*(If aircraft has been assigned a flight level at or above the lowest useable flight level),*

*VERIFY ASSIGNED FLIGHT LEVEL (flight level).*

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

## 5–2–20. ALTITUDE CONFIRMATION–NON–MODE C

**a.** Request a pilot to confirm assigned altitude on initial contact unless:

***NOTE–***
*For the purpose of this paragraph, "initial contact" means a pilot's first radio contact with each sector/position.*

**1.** The pilot states the assigned altitude, or

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

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

***PHRASEOLOGY–***
*(In level flight situations),VERIFY AT (altitude/flight level).*

*(In climbing/descending situations),VERIFY ASSIGNED ALTITUDE/FLIGHT LEVEL (altitude/flight level).*

**b. USA.** Reconfirm all pilot altitude read backs.

***PHRASEOLOGY–***
*(If the altitude read back is correct),*

*AFFIRMATIVE (altitude).*

*(If the altitude read back is not correct),*

*NEGATIVE. CLIMB/DESCEND AND MAINTAIN (altitude),*

*or*

*NEGATIVE. MAINTAIN (altitude).*

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

## 5–2–21. AUTOMATIC ALTITUDE REPORTING

Inform an aircraft when you want it to turn on/off the automatic altitude reporting feature of its transponder.

***PHRASEOLOGY–***
*SQUAWK ALTITUDE,*

*or*

*STOP ALTITUDE SQUAWK.*

***NOTE–***
*Controllers should be aware that not all aircraft have a capability to disengage the altitude squawk independently from the beacon code squawk. On some aircraft both functions are controlled by the same switch.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–2–18, Validation of Mode C Readout.*
*FAA Order JO 7110.65, Para 5–3–3, Beacon/ADS–B Identification Methods.*
*P/CG Term– Automatic Altitude Report.*

## 5–2–22. INFLIGHT DEVIATIONS FROM TRANSPONDER/MODE C REQUIREMENTS BETWEEN 10,000 FEET AND 18,000 FEET

Apply the following procedures to requests to deviate from the Mode C transponder requirement by aircraft operating in the airspace of the 48 contiguous states and the District of Columbia at and above 10,000 feet MSL and below 18,000 feet MSL, excluding the airspace at and below 2,500 feet AGL.

***NOTE–***
**1.** *14 CFR Section 91.215(b) provides, in part, that all U.S. registered civil aircraft must be equipped with an operable, coded radar beacon transponder when operating in the altitude stratum listed above. Such transponders must have*

*a Mode 3/A 4096 code capability, replying to Mode 3/A interrogation with the code specified by ATC, or a Mode S capability, replying to Mode 3/A interrogations with the code specified by ATC. The aircraft must also be equipped with automatic pressure altitude reporting equipment having a Mode C capability that automatically replies to Mode C interrogations by transmitting pressure altitude information in 100–foot increments.*

**2.** *The exception to 14 CFR Section 91.215 (b) is 14 CFR Section 91.215(b)(5) which states: except balloons, gliders, and aircraft without engine–driven electrical systems.*

***REFERENCE–***
*FAA Order JO 7210.3, Chapter 20, Temporary Flight Restrictions.*

**a.** Except in an emergency, do not approve inflight requests for authorization to deviate from 14 CFR Section 91.215(b)(5)(i) requirements originated by aircraft without transponder equipment installed.

**b.** Approve or disapprove other inflight deviation requests, or withdraw approval previously issued to such flights, solely on the basis of traffic conditions and other operational factors.

**c.** Adhere to the following sequence of action when an inflight VFR deviation request is received from an aircraft with an inoperative transponder or Mode C, or is not Mode C equipped:

**1.** Suggest that the aircraft conduct its flight in airspace unaffected by the CFRs.

**2.** Suggest that the aircraft file an IFR flight plan.

**3.** Suggest that the aircraft provide a VFR route of flight and maintain radio contact with ATC.

**d.** Do not approve an inflight deviation unless the aircraft has filed an IFR flight plan or a VFR route of flight is provided and radio contact with ATC is maintained.

**e.** You may approve an inflight deviation request which includes airspace outside your jurisdiction without the prior approval of the adjacent ATC sector/facility providing a transponder/Mode C status report is forwarded prior to control transfer.

**f.** Approve or disapprove inflight deviation requests within a reasonable period of time or advise when approval/disapproval can be expected.

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

## 5–2–23. BEACON TERMINATION

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

***PHRASEOLOGY–***

*STOP SQUAWK.*

*(For a military aircraft when you do not know if the military service requires that it continue operating on another mode),*

*STOP SQUAWK (mode in use).*

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

## 5–2–24. ALTITUDE FILTERS

*TERMINAL*

Set altitude filters to display Mode C altitude readouts to encompass all altitudes within the controller's jurisdiction. Set the upper limits no lower than 1,000 feet above the highest altitude for which the controller is responsible. In those stratified positions, set the lower limit to 1,000 feet or more below the lowest altitude for which the controller is responsible. When the position's area of responsibility includes down to an airport field elevation, the facility will normally set the lower altitude filter limit to encompass the field elevation so that provisions of Paragraph 2–1–6, Safety Alert, and Paragraph 5–2–18, Validation of Mode C Readout, subpara c2 may be applied. Air traffic managers may authorize temporary suspension of this requirement when target clutter is excessive.

## 5–2–25. INOPERATIVE OR MALFUNCTIONING ADS-B TRANSMITTER

**a.** Except as provided in Paragraph 5–2–27, inform an aircraft when the ADS–B transmitter appears to be inoperative or malfunctioning. Notify the OS/CIC of the aircraft call sign and location of aircraft.

***PHRASEOLOGY–***
*YOUR ADS–B TRANSMITTER APPEARS TO BE INOPERATIVE / MALFUNCTIONING.*

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

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

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

## 5–2–26. ADS–B ALERTS

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

***PHRASEOLOGY–***
*YOUR ADS–B FLIGHT ID DOES NOT MATCH YOUR FLIGHT PLAN AIRCRAFT IDENTIFICATION.*

**b.** Duplicate ICAO Address. If the broadcast ICAO address is shared with one or more flights in the same ADS–B Service Area (regardless of altitude), and radar reinforcement is not available, target resolution may be lost on one or both targets.

***NOTE–***
*Duplicate ICAO Address Alerts appear as "DA" and are associated with the Data Block (DB) on STARS systems. Duplicate ICAO Address Alerts appear as "DUP" and are associated with the DB on MEARTS systems. Duplicate ICAO Address Alerts appear as "Duplicate 24–bit Address" at the AT Specialist Workstation on ERAM systems.*

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

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

***NOTE–***
*Not all aircraft are capable of disengaging the ADS–B transmitter independently from the transponder.*

## 5–2–27. ADS–B OUT OFF OPERATIONS

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

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

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

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

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–2–25, Inoperative or Malfunctioning ADS–B Transmitter.*
*FAA Order JO 7210.3, Para 5–4–9, ADS–B Out OFF Operations.*
*FAA Order JO 7110.67, Para 11, Responsibilities.*

# Section 3. Radar Identification

## 5–3–1. APPLICATION

Before you provide radar service, establish and maintain radar identification of the aircraft involved, except as provided in Paragraph 5–5–1, Application, subparas b2, b3 and in Paragraph 8–5–5, Radar Identification Application.

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–1–9, Use of Tower Radar Displays.*
*FAA Order JO 7110.65, Para 5–1–1, Presentation and Equipment Performance.*

## 5–3–2. PRIMARY RADAR IDENTIFICATION METHODS

Identify a primary, radar beacon, or ADS–B target by using one of the following methods:

**a.** Observing a departing aircraft target within 1 mile of the takeoff runway end at airports with an operating control tower, provided one of the following methods of coordination is accomplished.

**1.** A verbal rolling/boundary notification is issued for each departure, or

**2.** A nonverbal rolling/boundary notification is used for each departure aircraft.

***NOTE–***
*Nonverbal notification can be accomplished via the use of a manual or electronic "drop tube" or automation.*

**b.** Observing a target whose position with respect to a fix (displayed on the video map, scribed on the map overlay, or displayed as a permanent echo) or a visual reporting point (whose range and azimuth from the radar antenna has been accurately determined and made available to the controller) corresponds with a direct position report received from an aircraft, and the observed track is consistent with the reported heading or route of flight. If a TACAN/VORTAC is located within 6,000 feet of the radar antenna, the TACAN/VORTAC may be used as a reference fix for radar identification without being displayed on the video map or map overlay.

***NOTE–***
**1.** *Establishment of radar identification through use of DME position information can be complicated by the fact that some military TACANs are not collocated with frequency–paired VORs and might be separated from them by as much as 31 miles.*

**2.** *Visual reporting points used for RADAR identification are limited to those most used by pilots and whose range and azimuth have been determined by supervisory personnel.*

**c.** Observing a target make an identifying turn or turns of 30 degrees or more, provided the following conditions are met:

***NOTE–***
*Use of identifying turns or headings which would cause the aircraft to follow normal IFR routes or known VFR flight paths might result in misidentification. When these circumstances cannot be avoided, additional methods of identification may be necessary.*

**1.** Except in the case of a lost aircraft, a pilot position report is received which assures you that the aircraft is within radar coverage and within the area being displayed.

**2.** Only one aircraft is observed making these turns.

**3.** For aircraft operating in accordance with an IFR clearance, you either issue a heading away from an area which will require an increased minimum IFR altitude or have the aircraft climb to the highest minimum altitude in your area of jurisdiction before you issue a heading.

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–1–9, Use of Tower Radar Displays.*
*FAA Order JO 7110.65, Para 5–12–11, Surveillance Unusable.*

## 5–3–3. BEACON/ADS–B IDENTIFICATION METHODS

When using only Mode 3/A radar beacon or ADS–B to identify a target, use one of the following methods:

**a.** Request the pilot to activate the "IDENT" feature of the transponder/ADS–B and then observe the identification display.

***PHRASEOLOGY–***
*IDENT.*
*SQUAWK (code) AND IDENT.*

**b.** Request the pilot to change to a specific discrete or nondiscrete code, as appropriate, and then observe the target or code display change. If a code change is required in accordance with Section 2, Beacon/ADS–B Systems, of this chapter, use the codes specified therein.

**c.** Request the pilot to change their transponder/ADS–B to "standby." After you observe the target

disappear for sufficient scans to assure that loss of target resulted from placing the transponder/ADS–B in "standby" position, request the pilot to return the transponder to normal operation and then observe the reappearance of the target.

***PHRASEOLOGY–***
*SQUAWK STANDBY,*

*then*

*SQUAWK NORMAL.*

**d.** *EN ROUTE.* An aircraft may be considered identified when the full data block is automatically associated with the target symbol of an aircraft that is squawking a discrete code assigned by the computer.

***NOTE–***
*Paired LDBs in ERAM do not display a beacon code.*

***PHRASEOLOGY–***
*SQUAWK (4 digit discrete code), AND IF YOUR ALTITUDE REPORTING EQUIPMENT IS TURNED OFF, SQUAWK ALTITUDE.*

***NOTE–***
*The AIM informs pilots to adjust Mode C transponders and ADS–B with altitude reporting capability activated unless deactivation is requested by ATC. "Squawk altitude" is included here to provide applicable phraseology.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–1–9, Use of Tower Radar Displays.*
*FAA Order JO 7110.65, Para 5–3–6, Position Information.*

## 5–3–4. TERMINAL AUTOMATION SYSTEMS IDENTIFICATION METHODS

*TERMINAL*

**a.** Consider an auto-acquired aircraft as identified when the data block is displayed and is visible to you, and one of the following conditions exist:

**1.** The radar or beacon identification procedures have been used to confirm the identity of the tagged target.

**2.** The aircraft is being handed off using a NAS automated system and one of the following does not appear in the data block: "CST", "NAT", "NT", "AMB", "OLD", "NB", "TU", "AM", "OL", or "TRK".

**b.** Use the data block to maintain target identity unless it is in a coast status or displaced from the appropriate target.

**c.** A displaced data block must be updated at all times.

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–1–9, Use of Tower Radar Displays.*

## 5–3–5. QUESTIONABLE IDENTIFICATION

**a.** Use more than one method of identification when proximity of targets, duplication of observed action, or any other circumstances cause doubt as to target identification.

**b.** If identification is questionable for any reason, take immediate action to re–identify the aircraft or terminate radar service. Identify the aircraft as follows:

**1.** As described in Paragraph 5–3–2, Primary Radar Identification Methods, or Paragraph 5–3–3, Beacon/ADS–B Identification Methods.

**2.** En route. Ensure that all primary targets are displayed when radar identification is lost or is questionable.

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

## 5–3–6. POSITION INFORMATION

Inform an aircraft of its position whenever radar identification is established by means of identifying turns or by any of the beacon identification methods outlined in Paragraph 5–3–3, Beacon/ADS–B Identification Methods. Position information need not be given when identification is established by position correlation or when a departing aircraft is identified within 1 mile of the takeoff runway end.

## 5–3–7. IDENTIFICATION STATUS

**a.** Inform an aircraft of radar contact when:

**1.** Initial radar identification in the ATC system is established.

**2.** Subsequent to loss of radar contact or terminating radar service, radar identification is reestablished.

***PHRASEOLOGY–***
*RADAR CONTACT (position if required).*

**b.** Inform an aircraft when radar contact is lost.

***PHRASEOLOGY–***
*RADAR CONTACT LOST (alternative instructions when required).*

# Section 4. Transfer of Radar Identification

## 5–4–1. APPLICATION

To provide continuous radar service to an aircraft and facilitate a safe, orderly, and expeditious flow of traffic, it is often necessary to transfer radar identification of an aircraft from one controller to another. This section describes the terms, methods, and responsibilities associated with this task. Interfacility and intrafacility transfers of radar identification must be accomplished in all areas of radar surveillance except where it is not operationally feasible. Where such constraints exist, they must be:

**a.** Covered in letters of agreement which clearly state that control will not be based upon a radar handoff, or

**b.** Coordinated by the transferring and receiving controllers for a specified period of time.

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–3–8, Coordination with Receiving Facility.*

## 5–4–2. TERMS

**a.** *Handoff.* An action taken to transfer the radar identification of an aircraft from one controller to another controller if the aircraft will enter the receiving controller's airspace and radio communications with the aircraft will be transferred.

**b.** *Radar Contact.* The term used to inform the controller initiating a handoff that the aircraft is identified and approval is granted for the aircraft to enter the receiving controller's airspace.

**c.** *Point Out.* An action taken by a controller to transfer the radar identification of an aircraft to another controller and radio communications will not be transferred.

**d.** *Point Out Approved.* The term used to inform the controller initiating a point out that the aircraft is identified and that approval is granted for the aircraft to enter the receiving controller's airspace, as coordinated, without a communications transfer or the appropriate automated system response.

**e.** *Traffic.* A term used to transfer radar identification of an aircraft to another controller for the purpose of coordinating separation action. Traffic is normally issued:

**1.** In response to a handoff or point out;

**2.** In anticipation of a handoff or point out; or

**3.** In conjunction with a request for control of an aircraft.

**f.** *Traffic Observed.* The term used to inform the controller issuing the traffic restrictions that the traffic is identified and that the restrictions issued are understood and will be complied with.

## 5–4–3. METHODS

**a.** Transfer the radar identification of an aircraft by at least one of the following methods:

**1.** Physically point to the target on the receiving controller's display.

**2.** Use landline voice communications.

**3.** Use automation capabilities.

***NOTE–***
*Automated handoff capabilities are only available when FDP is operational.*

**4.** *TERMINAL.* Use the "Modify" or "Quick Look" functions for data transfer between the TRACON and tower cab only if specific procedures are established in a facility directive. The local controller has the responsibility to determine whether or not conditions are adequate for the use of STARS data on the TDW.

***REFERENCE–***
*FAA Order JO 7210.3, Para 12–6–4, Use of Stars Quick Look Functions.*

**b.** When making a handoff, point-out, or issuing traffic restrictions, relay information to the receiving controller in the following order:

**1.** The position of the target relative to a fix, map symbol, or radar target known and displayed by both the receiving and transferring controller. Mileage from the reference point may be omitted when relaying the position of a target if a full data block associated with the target has been forced on the receiving controller's radar display.

***EXAMPLE–***
*"Point out, Southwest of Richmond VOR . . .."*

**2.** The aircraft identification, as follows:

**(a)** The aircraft call sign, or

**(b)** The discrete beacon code of the aircraft during interfacility point-outs only, if both the receiving and the transferring controllers agree.

***NOTE–***
*Acceptance of a point-out using the discrete beacon code as the aircraft's identification constitutes agreement.*

**(c)** EN ROUTE. The Computer Identification Number (CID) during intrafacility point-outs.

***EXAMPLE–***
*"Point Out, Southwest of Richmond VOR, C-I-D 123…"*

**3.** The assigned altitude, appropriate restrictions, and information that the aircraft is climbing or descending, if applicable, except when inter/intrafacility directives ensure that the altitude information will be known by the receiving controller.

***NOTE–***
*When physically pointing to the target, you do not have to state the aircraft position.*

**4.** Advise the receiving controller of pertinent information not contained in the data block or available flight data unless covered in an LOA or facility directive. Pertinent information may include:

**(a)** Assigned heading.

**(b)** Speed/altitude restrictions.

**(c)** Observed track or deviation from the last route clearance.

**(d)** Any other pertinent information.

***PHRASEOLOGY–***
*HANDOFF/POINT-OUT/TRAFFIC (aircraft position) (aircraft ID),*

*or*

*(discrete beacon code point-out only) (altitude, restrictions, and other pertinent information, if applicable).*

**c.** When receiving a handoff, point-out, or traffic restrictions, respond to the transferring controller as follows:

***PHRASEOLOGY–***
*(Aircraft ID) (restrictions, if applicable) RADAR CONTACT,*

*or*

*(aircraft ID or discrete beacon code) (restrictions, if applicable) POINT-OUT APPROVED,*

*or*

*TRAFFIC OBSERVED,*

*or*

*UNABLE (appropriate information, as required).*

**d.** If any doubt as to target identification exists after attempting confirmation in accordance with this section, apply the provisions of Paragraph 5–3–5, Questionable Identification.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–2–18, Validation of Mode C Readout.*

## 5–4–4. TRAFFIC

**a.** When using the term "traffic" for coordinating separation, the controller issuing traffic must issue appropriate restrictions.

**b.** The controller accepting the restrictions must be responsible to ensure that approved separation is maintained between the involved aircraft.

## 5–4–5. TRANSFERRING CONTROLLER HANDOFF

The transferring controller must:

**a.** Complete a radar handoff prior to an aircraft's entering the airspace delegated to the receiving controller.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–14, Coordinate Use of Airspace.*
*FAA Order JO 7110.65, Para 2–1–15, Control Transfer.*
*FAA Order JO 7110.65, Para 5–4–6, Receiving Controller Handoff.*

**b.** Verbally obtain the receiving controller's approval prior to making any changes to an aircraft's flight path, altitude, speed, or data block information while the handoff is being initiated or after acceptance, unless otherwise specified by a LOA or a facility directive.

**c.** Ensure that, prior to transferring communications:

**1.** Potential violations of adjacent airspace and potential conflicts between aircraft in their own area of jurisdiction are resolved.

**2.** Coordination has been accomplished with all controllers through whose area of jurisdiction the aircraft will pass prior to entering the receiving

controller's area of jurisdiction unless otherwise specified by a LOA or a facility directive.

**3.** Restrictions issued to ensure separation are passed to the receiving controller.

**d.** After transferring communications, continue to comply with the requirements of subparas c1 and 2.

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

**f.** Comply with the provisions of Paragraph 2–1–17, Radio Communications Transfer, subparas a and b. To the extent possible, transfer communications when the transfer of radar identification has been accepted.

***NOTE–***
*Before the STARS "modify/quick look" function is used to transfer radar identification, a facility directive which specifies communication transfer points is required.*

**g.** Advise the receiving controller of pertinent information not contained in the data block or flight progress strip unless covered in a LOA or facility directive. Pertinent information includes:

**1.** Assigned heading.

**2.** Air speed restrictions.

**3.** Altitude information issued.

**4.** Observed track or deviation from the last route clearance.

**5.** The beacon code if different from that normally used or previously coordinated.

**6.** Any other pertinent information.

**h.** Ensure that the data block is associated with the appropriate target.

**i.** Initiate verbal coordination to verify the position of primary or nondiscrete targets when using the automated handoff functions except for intrafacility handoffs using single-sensor systems or multisensor systems operating in a mosaic RDP mode.

**j.** Initiate verbal coordination before transferring control of a track when "CST," "FAIL," "NONE," "NB," "NX," "IF," "NT", or "TRK" is displayed in the data block.

**k.** Advise the receiving controller if radar monitoring is required.

**l.** Issue restrictions to the receiving controller which are necessary to maintain separation from other aircraft within your area of jurisdiction before releasing control of the aircraft.

**m.** Consider the target being transferred as identified on the receiving controller's display when the receiving controller acknowledges receipt verbally or has accepted an automated handoff.

**n.** Accomplish the necessary coordination with any intervening controllers whose area of jurisdiction is affected by the receiving controller's delay in the climb or the descent of an aircraft through the vertical limits of your area of jurisdiction when the receiving controller advises you of that delay before accepting the transfer of radar identification unless otherwise specified by a LOA or a facility directive.

## 5–4–6. RECEIVING CONTROLLER HANDOFF

The receiving controller must:

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

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–14, Coordinate Use of Airspace.*
*FAA Order JO 7110.65, Para 2–1–15, Control Transfer.*
*FAA Order JO 7110.65, Para 5–4–5, Transferring Controller Handoff.*

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

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

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

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

**e.** When using appropriate equipment, consider a discrete beacon target's identity to be confirmed when:

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

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

***NOTE–***
*When the aircraft generated discrete beacon code does not match the computer assigned beacon code, the code generated will be displayed in the data block. When the aircraft changes to the assigned discrete code, the code disappears from the data block. In this instance, the observance of code removal from the data block satisfies confirmation requirements.*

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

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

**1.** "AMB" and "AM": advise the other facility that a disparity exists between the position declared by their computer and that declared by your STARS system.

**2.** "NAT", "NT," or "TU": advise the other facility if a disparity exists between the position declared by their computer and the actual target position.

**3.** "DATA", "CST", "NONE", "NX", "OLD", or "OL": initiate verbal coordination.

**g.** ERAM: Notify the OS when a MISM is displayed in the data block.

**h.** Advise the transferring controller, prior to accepting the transfer of radar identification, that you will delay the climb or the descent of an aircraft through the vertical limits of the transferring controller's area of jurisdiction, unless otherwise specified in a LOA or a facility directive.

**i.** If you decide, *after* accepting the transfer of radar identification, to delay the aircraft's climb or descent through the vertical limits of the transferring controller's area of jurisdiction, advise the transferring controller of that decision as soon as possible.

## 5–4–7. POINT OUT

**a.** The transferring controller must:

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

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

***NOTE–***
**1.** *Use fourth line data for aircraft not on their flight plan route.*

**2.** *Where specified in a letter of agreement, some facilities may restrict interfacility automated point outs.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–10–1, En Route Or Oceanic Sector Team Responsibilities.*
*FAA Order JO 7110.65, Para 5–4–3, Methods.*
*FAA Order JO 7110.65, Para 5–4–10, En Route Fourth Line Data Block Usage.*
*FAA Order JO 7110.65, Para 5–14–3, Computer Entry of Flight Plan Information.*

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

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

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

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

**b.** The receiving controller must:

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

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

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

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

***REFERENCE–***
*FAA Order JO 7210.3, Para 8-2-1, Three Mile Airspace Operations*

**4.** When transitioning from terminal to en route control, 3 miles increasing to 5 miles or greater, provided:

**(a)** The aircraft are on diverging routes/courses, and/or

**(b)** The leading aircraft is and will remain faster than the following aircraft; and

**(c)** Separation constantly increasing and the first center controller will establish 5 NM or other appropriate form of separation prior to the aircraft departing the first center sector; and

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

**d.** ERAM:

**1.** Below FL 600- *5 miles.*

**2.** At or above FL 600- *10 miles.*

**3.** Up to and including FL 230 where all the following conditions are met – *3 miles:*

**(a)** Within the 3 NM separation area, and:

**(1)** Within 40 NM of the preferred radar; or

**(2)** Within 60 NM of the preferred radar when using ASR–9 with Mode S or ASR–11 MSSR Beacon; or

**(3)** When operating in track–based display mode.

**(b)** The preferred sensor and/or ADS–B is providing reliable targets.

**(c)** Facility directives specifically define the 3 NM separation area.

**(d)** The 3 NM separation area is displayable on the video map.

**(e)** Involved aircraft are displayed using the 3 NM target symbol.

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

**4.** When transitioning from terminal to en route control, 3 miles increasing to 5 miles or greater, provided:

**(a)** The aircraft are on diverging routes/courses, and/or

**(b)** The leading aircraft is and will remain faster than the following aircraft; and

**(c)** Separation constantly increasing and the first center controller will establish 5 NM or other appropriate form of separation prior to the aircraft departing the first center sector; and

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

***REFERENCE–***
*FAA Order JO 7210.3, Para 8-2-1, Three Mile Airspace Operations*

**e.** MEARTS Mosaic Mode:

**1.** Below FL 600- *5 miles.*

**2.** At or above FL 600- *10 miles.*

**3.** For areas meeting all of the following conditions – *3 miles*:

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

***NOTE–***
**1.** *Single Sensor Mode displays information from the radar input of a single site.*

**2.** *Procedures to convert MEARTS Mosaic Mode to MEARTS Single Sensor Mode at each PVD/MDM will be established by facility directive.*

**(b)** Significant operational advantages can be obtained.

**(c)** Within 40 NM of the sensor or within 60 NM of the sensor when using ASR–9 with Mode S or ASR–11 MSSR Beacon and within the 3 NM separation area.

**(d)** Up to and including FL230.

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

**4.** MEARTS Mosaic Mode Utilizing Single Source Polygon (San Juan CERAP and Honolulu

Control Facility only) when meeting all of the following conditions– *3 miles*:

**(a)** Up to and including FL230 within 40 miles from the antenna or within 60 NM when using ASR–9 with Mode S or ASR–11 MSSR Beacon and targets are from the adapted sensor.

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

**(c)** Significant operational advantages can be obtained.

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

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

**f.** STARS Multi–Sensor Mode:

***NOTE–***
**1.** *In Multi–Sensor Mode, STARS displays targets as filled and unfilled boxes, depending upon the target's distance from the radar site providing the data. Since there is presently no way to identify which specific site is providing data for any given target, utilize separation standards for targets 40 or more miles from the antenna.*

**2.** *When operating in STARS Single Sensor Mode, if TRK appears in the data block, handle in accordance with Paragraph 5–3–7, Identification Status, subpara b, and take appropriate steps to establish nonradar separation.*

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

**WAKE TURBULENCE APPLICATION**

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

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

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

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

**(1)** Heavy - *6 miles.*

**(2)** Large - *7 miles.*

**(3)** Small - *8 miles.*

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

**(1)** Heavy - *6 miles.*

**(2)** Large - *7 miles.*

**(3)** Small - *8 miles.*

**(c)** Behind heavy:

**(1)** Heavy - *4 miles.*

**(2)** Large or small - *5 miles.*

**2.** Separate small aircraft behind a B757 by *4 miles* when operating within 2,500 feet of the flight path of the leading aircraft over the surface of the earth and/or less than 500 feet below.

**3.** *TERMINAL.* When departing parallel runways separated by less than 2,500 feet, the 2,500 feet requirement in subparagraph 2 is not required when a small departs the parallel runway behind a B757. Issue a wake turbulence cautionary advisory and instructions that will establish lateral separation in accordance with subparagraph 2. Do not issue instructions that will allow the small to pass behind the B757.

***NOTE–***
**1.** *The application of Paragraph 5–8–3, Successive or Simultaneous Departures, satisfies this requirement.*

**2.** *Consider runways separated by less than 700 feet as a single runway because of the possible effects of wake turbulence.*

**WAKE TURBULENCE APPLICATION**

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

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

**1.** Small behind large– *4 miles*.

**2.** Small behind heavy– *6 miles.*

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

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

**j.** *TERMINAL*. 2.5 nautical miles (NM) separation is authorized between aircraft established on the final approach course within 10 NM of the landing runway when operating in 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 9–2–14, Military Aerial Refueling.*

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

## 5–5–7. PASSING OR DIVERGING

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

**1.** Single Site ASR or FUSION Mode

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

*(If the answer is in the affirmative):*

*"Report passing the traffic."*

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

## 5–5–8. ADDITIONAL SEPARATION FOR FORMATION FLIGHTS

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

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

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–13, Formation Flights.*
*FAA Order JO 7110.65, Para 5–5–1, Application.*
*FAA Order JO 7110.65, Para 7–7–3, Separation.*
*P/CG Term– Formation Flight.*

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

**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 9–2–14 , 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 $^{1}/_{2}$ mile.

***REFERENCE–***
*FAA Order JO 7210.3, Para 3–7–4, Monitoring of Mode 3/A Radar Beacon Codes.*

# Section 15. Standard Terminal Automation Replacement System (STARS)–Terminal

## 5–15–1. APPLICATION

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

## 5–15–2. RESPONSIBILITY

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

## 5–15–3. FUNCTIONAL USE

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

**a.** Tracking.

**b.** Tagging.

**c.** Handoff.

**d.** Altitude information.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–2–24, Altitude Filters.*

**e.** Coordination.

**f.** Ground speed.

**g.** Identification.

## 5–15–4. SYSTEM REQUIREMENTS

Use terminal automation systems as follows:

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

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

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

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

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

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

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

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

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

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

## 5–15–5. INFORMATION DISPLAYED

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

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

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

## 5–15–6. CA/MCI

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

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

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

**c.** Suppressing/Inhibiting CA/MCI alert.

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

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

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

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

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

## 5–15–7. INHIBITING MINIMUM SAFE ALTITUDE WARNING (MSAW)

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

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

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

## 5–15–8. TRACK SUSPEND FUNCTION

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

# Section 4. Approaches

## 7–4–1. VISUAL APPROACH

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

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

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

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

## 7–4–2. VECTORS FOR VISUAL APPROACH

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

***PHRASEOLOGY–***
*(Ident) FLY HEADING*

*or*

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

*(If appropriate)*

*WEATHER NOT AVAILABLE.*

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

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–9–1, Vectors to Final Approach Course.*
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*
*FAA Order JO 7110.65, Para 7–4–3, Clearance for Visual Approach.*
*FAA Order JO 7110.65, Para 7–4–4, Approaches to Multiple Runways.*
*FAA Order JO 7110.65, Para 7–6–7, Sequencing.*
*FAA Order JO 7110.65, Para 7–7–3, Separation.*

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

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

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

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

**1.** The airport or the runway in sight at airports with operating control towers.

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

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

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

*or*

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

*(and if appropriate)*

*WEATHER NOT AVAILABLE*

*or*

*VERIFY THAT YOU HAVE THE (airport) WEATHER.*

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

**c.** Clear an aircraft for a visual approach when:

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

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

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

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

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

**d.** All aircraft following a heavy, or a small aircraft following a B757, must be informed of the airplane manufacturer and/or model.

***EXAMPLE–***
*"Cessna Three Four Juliet, following a Boeing 757, 12 o'clock, six miles."*

*or*

*"Cessna Three Four Juliet, following a Seven fifty seven, 12 o'clock, six miles."*

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

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

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

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

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

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

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

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–4–4, Approaches to Multiple Runways.*

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

**a.** All aircraft must be informed that approaches are being conducted to parallel, intersecting, or converging runways. This may be accomplished through use of the ATIS.

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

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

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

**c.** In addition to the requirements in Paragraph 7–2–1, Visual Separation, Paragraph 7–4–1, Visual Approach, Paragraph 7–4–2, Vectors for Visual Approach, and Paragraph 7–4–3, Clearance for Visual Approach, the following conditions apply to visual approaches being conducted simultaneously to parallel, intersecting, and converging runways, as appropriate:

**1.** Parallel runways separated by less than 2,500 feet. Unless approved separation is provided by ATC, an aircraft must report sighting a preceding aircraft making an approach (instrument or visual) to the adjacent parallel runway. When an aircraft reports another aircraft in sight on the adjacent final approach course and visual separation is applied, controllers

# Section 6. Basic Radar Service to VFR Aircraft– Terminal

## 7–6–1. APPLICATION

**a.** Basic radar services for VFR aircraft must include:

**1.** Safety alerts.

**2.** Traffic advisories.

**3.** Limited radar vectoring when requested by the pilot.

**4.** Sequencing at locations where procedures have been established for this purpose and/or when covered by a LOA.

**b.** Apply the procedures contained in Paragraph 7–1–3, Approach Control Service for VFR Arriving Aircraft, when arriving VFR aircraft are handled by approach control and provide vectoring service in accordance with Chapter 5, Radar, Section 7, Speed Adjustment, in addition to the radar services prescribed in Paragraph 5–6–1, Application, and Paragraph 5–6–2, Methods.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–16, Surface Areas.*
*FAA Order JO 7110.65, Para 7–6–1, Application.*
*FAA Order JO 7210.3, Chapter 12, Section 1, Terminal VFR Radar Services.*
*AIM, Para 4–1–18, Terminal Radar Services for VFR Aircraft.*

## 7–6–2. SERVICE AVAILABILITY

**a.** Inform aircraft on initial contact whenever this service cannot be provided because of radar outage and apply Paragraph 7–1–3, Approach Control Service for VFR Arriving Aircraft.

**b.** Provide the service, to the extent possible using an available frequency, if an aircraft desires the service but cannot communicate on the appropriate frequencies. Aircraft which do not desire radar service may be fitted into the landing sequence by the tower. Coordination of these aircraft must be accomplished with the approach control unless a facility directive/LOA prescribes otherwise. Nonparticipating aircraft must, to the extent possible, be given the same landing sequence they would have received had they been sequenced by radar vectors.

**c.** Radar sequencing to the primary airport, when local procedures have been developed, must be provided unless the pilot states that the service is not requested. Arriving aircraft are assumed to want radar service unless the pilot states “Negative radar service,” or makes a similar comment.

## 7–6–3. INITIAL CONTACT

An aircraft sighted by the local controller at the time of first radio contact may be positioned in the landing sequence after coordination with approach control.

## 7–6–4. IDENTIFICATION

Identify the aircraft before taking action to position it in the approach sequence.

## 7–6–5. HOLDING

Hold VFR aircraft over the initial reporting fix or a fix near the airport when holding is required to establish an approach sequence.

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–1–4, Visual Holding of VFR Aircraft.*

## 7–6–6. APPROACH SEQUENCE

Do not assign landing sequence numbers, when establishing aircraft in the approach sequence, unless this responsibility has been delegated in a LOA or facility directive.

***NOTE–***
*The landing sequence is ordinarily established by the tower.*

## 7–6–7. SEQUENCING

**a.** Establish radar contact before instructing a VFR aircraft to enter the traffic pattern at a specified point or vectoring the aircraft to a position in the approach sequence. Inform the pilot of the aircraft to follow when the integrity of the approach sequence is dependent on following a preceding aircraft. Ensure visual contact is established with the aircraft to follow and provide instruction to follow that aircraft.

***PHRASEOLOGY–***
*FOLLOW (description) (position, if necessary).*

**b.** Direct a VFR aircraft to a point near the airport to hold when a position is not available in the

approach sequence for the runway in use. The aircraft may be vectored to another runway after coordination with the tower.

**c.** Apply the following procedures to a VFR aircraft being radar sequenced:

**1.** The provisions of Paragraph 5–5–4, Minima, subparagraphs g and h.

**2.** When parallel runways are less than 2,500 feet apart, do not permit a super or heavy aircraft to overtake any aircraft, nor a B757 or other large aircraft to overtake a small aircraft established on final within the facility's area of responsibility.

## 7–6–8. CONTROL TRANSFER

**a.** Inform the tower of the aircraft's position and then instruct the pilot to contact the tower.

**b.** The aircraft may be instructed to contact the tower prior to the tower being advised of the aircraft's position provided:

**1.** The tower advises the aircraft is in sight, and

**2.** Space is available in the landing sequence.

**c.** Instruct the pilot to contact the tower at the appropriate point when the approach control STARS track data is being displayed on the tower's TDW display, the aircraft is tagged by STARS, and a facility directive specifies change of communications and control jurisdiction points.

***NOTE–***
*The point at which an aircraft is instructed to contact the tower is determined by prior coordination between the tower and approach control and will vary, depending on the runway in use, weather, etc. The transfer of communications ordinarily occurs at least 5 miles from the runway. The point for the transfer of communications should be a sufficient distance from the airport to permit the tower to properly sequence the aircraft, but not at a distance that could derogate the provision of radar traffic information service.*

## 7–6–9. ABANDONED APPROACH

Instruct the aircraft to change to approach control for sequencing when an aircraft, under tower control, abandons the approach and coordination with approach control reveals no immediate space in the approach sequence.

## 7–6–10. VFR DEPARTURE INFORMATION

Inform departing VFR aircraft who request radar traffic advisories when to contact departure control and the frequency to use. Provide traffic advisories in accordance with Paragraph 2–1–21, Traffic Advisories, after the departure is radar identified.

***NOTE–***
*Departing aircraft desiring traffic information are expected to request the service and to state their proposed direction of flight upon initial contact with ground control.*

## 7–6–11. TERMINATION OF SERVICE

Basic radar services should be provided to the extent possible, workload permitting. Terminate radar service to aircraft landing at airports other than those where sequencing service is provided at a sufficient distance from the airport to permit the pilot to change to the appropriate frequency for traffic and airport information.

***PHRASEOLOGY–***
*RADAR SERVICE TERMINATED, SQUAWK ONE TWO ZERO ZERO,*

*or*

*SQUAWK VFR,*

*then*

*CHANGE TO ADVISORY FREQUENCY APPROVED,*

*or*

*CONTACT (frequency identification),*

*or*

*FREQUENCY CHANGE APPROVED.*

## 7–6–12. SERVICE PROVIDED WHEN TOWER IS INOPERATIVE

**a.** Provide the following services during hours when the tower is not in operation:

**1.** Wind direction and velocity.

***NOTE–***
*Issue information provided from the FSS or WSO. Otherwise, inform the pilot that wind information is not available.*

**2.** Traffic information.

**3.** Inform aircraft when radar service is terminated.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–1–13, Radar Service Termination.*

**b.** Do not assign landing sequence.

controller must take action to apply another form of separation.

***NOTE–***
*When same track aircraft are at, or are expected to reduce to, the minima, speed control techniques should be applied in order to maintain the required separation.*

## 8–9–4. LATERAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 4, Lateral Separation, apply the following:

**a.** Within areas where Required Navigation Performance 10 (RNP–10) separation and procedures are authorized, apply *50 NM* to RNP–10 approved aircraft.

**b.** Apply *30 NM* to (at a minimum, RNP–4, RCP 240, and RSP 180) approved aircraft operating within airspace designated for RNP–4 when direct controller/pilot communications, via voice or Controller Pilot Data Link Communications (CPDLC), and the required ADS–C contracts are maintained and monitored by an automated flight data processor (e.g., ATOP).

**c.** Apply *100 NM* to aircraft not covered by subparagraphs a and b.

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

Aircraft must request an ATC clearance to deviate. Since aircraft will not fly into known areas of weather, weather deviation requests should take priority over routine requests. If there is no traffic in the horizontal dimension, ATC must issue clearance to deviate from track; or if there is conflicting traffic in the horizontal dimension, ATC separates aircraft by establishing vertical separation. If there is conflicting traffic and ATC is unable to establish approved separation, ATC must:

**a.** Advise the pilot unable to issue clearance for requested deviation;

**b.** Advise the pilot of conflicting traffic; and

**c.** Request pilot's intentions.

***PHRASEOLOGY–***
*UNABLE (requested deviation), TRAFFIC IS (call sign, position, altitude, direction), SAY INTENTIONS.*

***NOTE–***
**1.** *The pilot will advise ATC of intentions by the most expeditious means available.*

**2.** *In the event that pilot/controller communications cannot be established or a revised AT clearance is not available, pilots will follow the procedures outlined in the Regional Supplementary Procedures, ICAO Doc 7030 and Chart Supplements.*

# Section 10. North American ICAO Region

## 8–10–1. APPLICATION

Provide air traffic control services in the North American ICAO Region with the procedures and minima contained in this section.

## 8–10–2. VERTICAL SEPARATION

Provide vertical separation in accordance with:

**a.** Chapter 4, IFR, Section 5, Altitude Assignment and Verification; and

**b.** Facility directives depicting the transition between flight levels and metric altitudes.

## 8–10–3. LONGITUDINAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 3, Longitudinal Separation, apply the following:

**a.** Minima based on time:

**1.** *15 minutes* between turbojet aircraft.

**2.** The prescribed minima in accordance with Paragraph 8–3–3, Mach Number Technique.

**3.** *20 minutes* between other aircraft.

**b.** Clear an aircraft for an ADS-B In Trail Procedure (ITP) climb or descent provided the following conditions are satisfied:

**1.** The ITP climb or descent has been requested by the pilot;

**2.** The aircraft identification of each reference aircraft in the ITP request exactly matches the Item 7 - aircraft identification of the corresponding aircraft's filed flight plan;

**3.** The reported ITP distance between the ITP aircraft and any reference aircraft is 15 NM or more;

**4.** Both the ITP aircraft and reference aircraft are either on:

**(a)** same identical tracks and any turn at a waypoint shall be limited to less than 45 degrees; or

**(b)** same tracks with no turns permitted that reduce required separation during the ITP.

***NOTE–***
*Same identical tracks are where the angular difference is zero degrees.*

**5.** No speed or route change clearance shall be issued to the ITP aircraft until the ITP climb or descent is completed;

**6.** The altitude difference between the ITP aircraft and any reference aircraft shall be 2000 ft or less;

**7.** No instruction to amend speed, altitude or route shall be issued to any reference aircraft until the ITP climb or descent is completed;

**8.** The maximum closing speed between the ITP aircraft and each reference aircraft shall be Mach 0.06; and

**9.** The ITP aircraft shall not be a reference aircraft in another ITP clearance.

***NOTE–***
*ATOP is designed to check for the above criteria prior to allowing the minima to be provided.*

**c.** Minima based on distance using Automatic Dependent Surveillance – Contract (ADS-C) in the Anchorage Oceanic and Anchorage Continental CTAs only:

***NOTE–***
*The minima described in this paragraph are not applicable within airspace in the Anchorage Arctic CTA.*

**1.** Apply the minima as specified in TBL 8–10–1 between aircraft on the same track within airspace in the Anchorage Oceanic and Anchorage Continental CTAs designated for Required Navigation Performance (RNP), provided:

**(a)** Direct controller/pilot communication via voice or Controller Pilot Data Link Communications (CPDLC) is established, and

**(b)** The required ADS-C periodic reports are maintained and monitored by an automated flight data processor (for example, ATOP).

*TBL 8–10–1*
**ADS–C Criteria**

| Minima | | | | |
|---|---|---|---|---|
| **Standard** | **RNP** | **RCP** | **RSP** | **Maximum ADS-C Periodic Reporting Interval** |
| 50 NM | 10 | 240 | 180 | 27 minutes |
| 50 NM | 4 | 240 | 180 | 32 minutes |
| 30 NM | 4 | 240 | 180 | 10 minutes |

**2.** Aircraft on reciprocal tracks in the Anchorage Oceanic and Anchorage Continental CTAs may be cleared to climb or descend to or through the altitude(s) occupied by another aircraft provided:

**(a)** An ADS-C position report on at least one of the aircraft has been received beyond the passing point, and

**(b)** The aircraft have passed each other by the applicable separation minimum.

***NOTE–***
*ATOP has been designed to check for the above criteria prior to allowing the minima to be provided.*

**3.** When an ADS-C periodic or waypoint change event report is overdue by *3 minutes*, the controller must take action to obtain an ADS-C report.

**4.** If no report is received within *6 minutes* of the time the original report was due, the controller must take action to apply another form of separation.

**5.** Aircraft on the same track may be cleared to climb or descend through the level of another aircraft provided:

**(a)** The longitudinal distance between the aircraft is determined from near simultaneous ADS–C demand reports and the ATOP software is used to ensure the following conditions are met;

**(b)** The longitudinal distance between the aircraft, as determined in a) above, is not less than:

**(1)** 15 NM when the preceding aircraft is at the same speed or faster than the following aircraft; or

**(2)** 25 NM when the following aircraft is not more than Mach 0.02 faster than the preceding aircraft.

**(c)** The altitude difference between aircraft is not more than 2000 ft;

**(d)** The clearance is for a climb or descent of 4000 ft or less;

**(e)** Both aircraft are filed as single flights not flying in formation with other aircraft;

**(f)** Both aircraft are in level flight at a single altitude;

**(g)** Both aircraft are same direction;

**(h)** Neither aircraft are on a weather deviation;

**(i)** Neither aircraft have an open CPDLC request for a weather deviation;

**(j)** Neither aircraft are on an offset with a rejoin clearance; and

**(k)** The clearance is issued with a restriction that ensures vertical separation is re–established within 15 minutes from the first demand report request.

**d.** Minima based on DME/RNAV:

Apply the following DME/RNAV minima in Control 1234H, Control 1487H, and the Norton Sound High Control areas to turbojet aircraft established on or transitioning to the North Pacific (NOPAC) Route System.

**1.** *30 NM* between aircraft when DME reports or radar observations are used to establish the distance, otherwise at least *40 NM* based on RNAV must be applied; and

**2.** Unless both aircraft are radar identified, both aircraft must provide DME/RNAV distance reports via direct voice that indicates the appropriate separation exists; and

**3.** Application of DME/RNAV separation without direct voice communications may not continue for more than *90 minutes;* and

**4.** The preceding aircraft is assigned the same or greater Mach number than the following aircraft; and

**5.** Both aircraft must be advised of the other aircraft involved, including the distance relative to the flights.

***EXAMPLE–***
*"Maintain Mach point eight four, same direction traffic, twelve o'clock, three five miles."*

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

## 8–10–4. LATERAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 4, Lateral Separation, apply the following:

**a.** *50 NM* to RNP–10 approved aircraft within areas where RNP–10 separation and procedures are authorized,

**b.** *30 NM* to (at a minimum, RNP–4, RCP 240, and RSP 180) approved aircraft operating within the Anchorage Oceanic CTA and Anchorage Continental CTA when direct controller/pilot communications, via voice or Controller Pilot Data Link Communications (CPDLC), and the required ADS–C contracts are maintained and monitored by an automated flight data processor (for example, ATOP).

***NOTE–***
*The minimum described in subparagraph b is not applicable within airspace in the Anchorage Arctic CTA.*

**c.** *90 NM* to aircraft not covered by subparagraphs a or b.

## 9–2–17. 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.

## 9–2–18. 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.*

## 9–2–19. 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 +/– 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.*

## 9–2–20. 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 5–3–6, 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.

## 9–2–21. 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).*

## 9–2–22. 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.

## 9–2–23. 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.

**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

# Chapter 13. Decision Support Tools

## Section 1. ERAM – En Route

### 13–1–1. DESCRIPTION

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

### 13–1–2. CONFLICT DETECTION AND RESOLUTION

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

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

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

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

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

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

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

**e.** When the Stop Probe feature is activated for an aircraft, conflict probe for that aircraft shall be restarted before transfer of control, unless otherwise coordinated.

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

### 13–1–3. TRIAL PLANNING

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

**a.** Solutions to predicted conflicts.

**b.** The feasibility of granting user requests.

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

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

### 13–1–4. CONFLICT PROBE-BASED CLEARANCES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## 13–1–7. HOLDING

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

## 13–1–8. RECORDING OF CONTROL DATA

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

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

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

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

***TBL 13–1–1***
**Clearance Abbreviations**

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

# 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:
DOMESTIC NOTICES
INTERNATIONAL NOTICES

**e.** Terms Deleted:
AUTOMATED RADAR TERMINAL SYSTEMS (ARTS)
CENTER RADAR ARTS PRESENTATION/PROCESSING (CENRAP)
CENTER RADAR ARTS PRESENTATION/PROCESSING–PLUS (CENRAP–PLUS)
HIGH ALTITUDE REDESIGN (HAR)
NORTH MARK
NOTICES TO AIRMEN PUBLICATION (NTAP)

**f.** Terms Modified:
MINIMUM SAFE ALTITUDE WARNING (MSAW)
NAVIGATION REFERENCE SYSTEM (NRS)
PREFERRED IFR ROUTES
QUICK LOOK
RADAR APPROACH CONTROL FACILITY
TERMINAL AUTOMATION SYSTEM (TAS)
TRAFFIC MANAGEMENT PROGRAM ALERT

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

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 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.)

# C

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

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

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

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

CARDINAL ALTITUDES– "Odd" or "Even" thousand-foot altitudes or flight levels; e.g., 5,000, 6,000, 7,000, FL 250, FL 260, FL 270.
(See ALTITUDE.)
(See FLIGHT LEVEL.)

CARDINAL FLIGHT LEVELS–
(See CARDINAL ALTITUDES.)

CAT–
(See CLEAR-AIR TURBULENCE.)

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

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

CEILING [ICAO]– The height above the ground or water of the base of the lowest layer of cloud below 6,000 meters (20,000 feet) covering more than half the sky.

CENTER–
(See AIR ROUTE TRAFFIC CONTROL CENTER.)

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

CENTER TRACON AUTOMATION SYSTEM (CTAS)– A computerized set of programs designed to aid Air Route Traffic Control Centers and TRACONs in the management and control of air traffic.

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

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

CEP–
(See CENTRAL EAST PACIFIC.)

CERAP–
(See COMBINED CENTER-RAPCON.)

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

CFR–
(See CALL FOR RELEASE.)

CHA
(See CONTINGENCY HAZARD AREA)

CHAFF– Thin, narrow metallic reflectors of various lengths and frequency responses, used to reflect radar energy. These reflectors, when dropped from aircraft and allowed to drift downward, result in large targets on the radar display.

CHART SUPPLEMENT U.S.– A publication designed primarily as a pilot's operational manual containing all airports, seaplane bases, and heliports open to the public including communications data,

navigational facilities, and certain special notices and procedures. This publication is issued in seven volumes according to geographical area.

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

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

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

CHASE AIRCRAFT–
(See CHASE.)

CHOP– A form of turbulence.

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

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

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

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

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

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

CIRCLING MINIMA–
(See LANDING MINIMUMS.)

CLASS A AIRSPACE–
(See CONTROLLED AIRSPACE.)

CLASS B AIRSPACE–
(See CONTROLLED AIRSPACE.)

CLASS C AIRSPACE–
(See CONTROLLED AIRSPACE.)

CLASS D AIRSPACE–
(See CONTROLLED AIRSPACE.)

CLASS E AIRSPACE–
(See CONTROLLED AIRSPACE.)

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

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

CLEAR OF THE RUNWAY–

**a.** Taxiing aircraft, which is approaching a runway, is clear of the runway when all parts of the

aircraft are held short of the applicable runway holding position marking.

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

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

***CLEARANCE–***
(See AIR TRAFFIC CLEARANCE.)

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

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

***CLEARANCE VOID IF NOT OFF BY (TIME)–*** Used by ATC to advise an aircraft that the departure clearance is automatically canceled if takeoff is not made prior to a specified time. The pilot must obtain a new clearance or cancel his/her IFR flight plan if not off by the specified time.
(See ICAO term CLEARANCE VOID TIME.)

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

***CLEARED APPROACH–*** ATC authorization for an aircraft to execute any standard or special instrument approach procedure for that airport. Normally, an aircraft will be cleared for a specific instrument approach procedure.
(See CLEARED (Type of) APPROACH.)
(See INSTRUMENT APPROACH PROCEDURE.)
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

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

***CLEARED AS FILED–*** Means the aircraft is cleared to proceed in accordance with the route of flight filed in the flight plan. This clearance does not include the altitude, DP, or DP Transition.
(See REQUEST FULL ROUTE CLEARANCE.)
(Refer to AIM.)

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

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

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

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

CLEARWAY– An area beyond the takeoff runway under the control of airport authorities within which terrain or fixed obstacles may not extend above specified limits. These areas may be required for certain turbine-powered operations and the size and upward slope of the clearway will differ depending on when the aircraft was certificated.
(Refer to 14 CFR Part 1.)

***CLIMB TO VFR–*** ATC authorization for an aircraft to climb to VFR conditions within Class B, C, D, and E surface areas when the only weather limitation is

restricted visibility. The aircraft must remain clear of clouds while climbing to VFR.

(See SPECIAL VFR CONDITIONS.)

(Refer to AIM.)

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

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

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

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

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

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

CLT–

(See CALCULATED LANDING TIME.)

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

(See CHAFF.)

(See GROUND CLUTTER.)

(See PRECIPITATION.)

(See TARGET.)

(See ICAO term RADAR CLUTTER.)

CMNPS–

(See CANADIAN MINIMUM NAVIGATION PERFORMANCE SPECIFICATION AIRSPACE.)

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

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

(See DISCRETE CODE.)

COLD TEMPERATURE COMPENSATION– An action on the part of the pilot to adjust an aircraft's indicated altitude due to the effect of cold temperatures on true altitude above terrain versus aircraft indicated altitude. The amount of compensation required increases at a greater rate with a decrease in temperature and increase in height above the reporting station.

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

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

(See AIR ROUTE TRAFFIC CONTROL CENTER.)

(See RADAR APPROACH CONTROL FACILITY.)

COMMON POINT– A significant point over which two or more aircraft will report passing or have reported passing before proceeding on the same or diverging tracks. To establish/maintain longitudinal separation, a controller may determine a common point not originally in the aircraft's flight plan and then clear the aircraft to fly over the point.

(See SIGNIFICANT POINT.)

COMMON PORTION–

(See COMMON ROUTE.)

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

**OR**

COMMON ROUTE– Typically the portion of a RNAV STAR between the en route transition end point and the runway transition start point; however, the common route may only consist of a single point that joins the en route and runway transitions.

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

(See DESIGNATED COMMON TRAFFIC ADVISORY FREQUENCY (CTAF) AREA.)

(Refer to AC 90-42, Traffic Advisory Practices at Airports Without Operating Control Towers.)

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

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

(See OUTER MARKER.)

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

(See MIDDLE MARKER.)

(See ICAO term LOCATOR.)

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

***COMPLY WITH RESTRICTIONS***– An ATC instruction that requires an aircraft being vectored back onto an arrival or departure procedure to comply with all altitude and/or speed restrictions depicted on the procedure. This term may be used in lieu of repeating each remaining restriction that appears on the procedure.

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

(Refer to AIM.)

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

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 conflictions between aircraft that are radar identified and in communication with ATC by ensuring that radar targets do not touch. Pertinent

traffic advisories shall be issued when this procedure is applied.

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

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

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

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

CONTACT–

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

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

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

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

(Refer to AIM.)

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

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

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

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 nautical mile (NM) radius, a circle with a 10NM radius that extends no lower than 1,200 feet up to 4,000 feet above the airport elevation, and an outer area that is not charted. Each person must establish two-way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while within the airspace. VFR aircraft are only separated from IFR aircraft within the airspace.

(See OUTER AREA.)

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

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

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

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

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

CONTROLLER–
(See AIR TRAFFIC CONTROL SPECIALIST.)

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

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

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

CONVECTIVE SIGNIFICANT METEOROLOGICAL INFORMATION–
(See CONVECTIVE SIGMET.)

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

violate a succeeding altitude restriction or altitude assignment.

(See ALTITUDE RESTRICTION.)

(Refer to AIM.)

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

(See ALTITUDE RESTRICTION.)

(See MINIMUM IFR ALTITUDES.)

(Refer to 14 CFR Part 91.)

CROSSWIND–

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

(See TRAFFIC PATTERN.)

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

(See CROSSWIND COMPONENT.)

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

***CRUISE–*** Used in an ATC clearance to authorize a pilot to conduct flight at any altitude from the minimum IFR altitude up to and including the altitude specified in the clearance. The pilot may level off at any intermediate altitude within this block of airspace. Climb/descent within the block is to be made at the discretion of the pilot. However, once the pilot starts descent and verbally reports leaving an altitude in the block, he/she may not return to that altitude without additional ATC clearance. Further, it is approval for the pilot to proceed to and make an approach at destination airport and can be used in conjunction with:

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

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

(See INSTRUMENT APPROACH PROCEDURE.)

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

CRUISING ALTITUDE– An altitude or flight level maintained during en route level flight. This is a constant altitude and should not be confused with a cruise clearance.

(See ALTITUDE.)

(See ICAO term CRUISING LEVEL.)

CRUISING LEVEL–

(See CRUISING ALTITUDE.)

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

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

CTA–

(See CONTROLLED TIME OF ARRIVAL.)

(See ICAO term CONTROL AREA.)

CTAF–

(See COMMON TRAFFIC ADVISORY FREQUENCY.)

CTAS–

(See CENTER TRACON AUTOMATION SYSTEM.)

CTOP–

(See COLLABORATIVE TRAJECTORY OPTIONS PROGRAM)

CTRD–

(See CERTIFIED TOWER RADAR DISPLAY.)

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

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

CVFP APPROACH–
(See CHARTED VISUAL FLIGHT PROCEDURE APPROACH.)

CWA–
(See CENTER WEATHER ADVISORY and WEATHER ADVISORY.)

***DIRECT–*** Straight line flight between two navigational aids, fixes, points, or any combination thereof. When used by pilots in describing off-airway routes, points defining direct route segments become compulsory reporting points unless the aircraft is under radar contact.

DIRECTLY BEHIND– An aircraft is considered to be operating directly behind when it is following the actual flight path of the lead aircraft over the surface of the earth except when applying wake turbulence separation criteria.

DISCRETE BEACON CODE–
(See DISCRETE CODE.)

DISCRETE CODE– As used in the Air Traffic Control Radar Beacon System (ATCRBS), any one of the 4096 selectable Mode 3/A aircraft transponder codes except those ending in zero zero; e.g., discrete codes: 0010, 1201, 2317, 7777; nondiscrete codes: 0100, 1200, 7700. Nondiscrete codes are normally reserved for radar facilities that are not equipped with discrete decoding capability and for other purposes such as emergencies (7700), VFR aircraft (1200), etc.
(See RADAR.)
(Refer to AIM.)

DISCRETE FREQUENCY– A separate radio frequency for use in direct pilot-controller communications in air traffic control which reduces frequency congestion by controlling the number of aircraft operating on a particular frequency at one time. Discrete frequencies are normally designated for each control sector in en route/terminal ATC facilities. Discrete frequencies are listed in the Chart Supplement U.S. and the DOD FLIP IFR En Route Supplement.
(See CONTROL SECTOR.)

DISPLACED THRESHOLD– A threshold that is located at a point on the runway other than the designated beginning of the runway.
(See THRESHOLD.)
(Refer to AIM.)

DISTANCE MEASURING EQUIPMENT (DME)– Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.
(See TACAN.)
(See VORTAC.)

DISTRESS– A condition of being threatened by serious and/or imminent danger and of requiring immediate assistance.

DIVE BRAKES–
(See SPEED BRAKES.)

DIVERSE VECTOR AREA– In a radar environment, that area in which a prescribed departure route is not required as the only suitable route to avoid obstacles. The area in which random radar vectors below the MVA/MIA, established in accordance with the TERPS criteria for diverse departures, obstacles and terrain avoidance, may be issued to departing aircraft.

DIVERSION (DVRSN)– Flights that are required to land at other than their original destination for reasons beyond the control of the pilot/company, e.g. periods of significant weather.

DME–
(See DISTANCE MEASURING EQUIPMENT.)

DME FIX– A geographical position determined by reference to a navigational aid which provides distance and azimuth information. It is defined by a specific distance in nautical miles and a radial, azimuth, or course (i.e., localizer) in degrees magnetic from that aid.
(See DISTANCE MEASURING EQUIPMENT.)
(See FIX.)

DME SEPARATION– Spacing of aircraft in terms of distances (nautical miles) determined by reference to distance measuring equipment (DME).
(See DISTANCE MEASURING EQUIPMENT.)

DOD FLIP– Department of Defense Flight Information Publications used for flight planning, en route, and terminal operations. FLIP is produced by the National Geospatial–Intelligence Agency (NGA) for world-wide use. United States Government Flight Information Publications (en route charts and instrument approach procedure charts) are incorporated in DOD FLIP for use in the National Airspace System (NAS).

DOMESTIC AIRSPACE– Airspace which overlies the continental land mass of the United States plus Hawaii and U.S. possessions. Domestic airspace extends to 12 miles offshore.

DOMESTIC NOTICES– A special notice or notice containing graphics or plain language text pertaining to almost every aspect of aviation, such as military

training areas, large scale sporting events, air show information, Special Traffic Management Programs (STMPs), and airport–specific information. These notices are applicable to operations within the United States and can be found on the Domestic Notices website, updated every 28 days.

DOWNBURST– A strong downdraft which induces an outburst of damaging winds on or near the ground. Damaging winds, either straight or curved, are highly divergent. The sizes of downbursts vary from 1/2 mile or less to more than 10 miles. An intense downburst often causes widespread damage. Damaging winds, lasting 5 to 30 minutes, could reach speeds as high as 120 knots.

DOWNWIND LEG–
(See TRAFFIC PATTERN.)

DP–
(See INSTRUMENT DEPARTURE PROCEDURE.)

DRAG CHUTE– A parachute device installed on certain aircraft which is deployed on landing roll to assist in deceleration of the aircraft.

DROP ZONE– Any pre-determined area upon which parachutists or objects land after making an intentional parachute jump or drop.
(Refer to 14 CFR §105.3, Definitions)

DSP–
(See DEPARTURE SEQUENCING PROGRAM.)

DT–
(See DELAY TIME.)

DTAS–
(See DIGITAL TERMINAL AUTOMATION SYSTEM.)

DUE REGARD– A phase of flight wherein an aircraft commander of a State-operated aircraft assumes responsibility to separate his/her aircraft from all other aircraft.
(See also FAA Order JO 7110.65, Para 1–2–1, WORD MEANINGS.)

DUTY RUNWAY–
(See RUNWAY IN USE/ACTIVE RUNWAY/DUTY RUNWAY.)

DVA–
(See DIVERSE VECTOR AREA.)

DVFR–
(See DEFENSE VISUAL FLIGHT RULES.)

DVFR FLIGHT PLAN– A flight plan filed for a VFR aircraft which intends to operate in airspace within which the ready identification, location, and control of aircraft are required in the interest of national security.

DVRSN–
(See DIVERSION.)

DYNAMIC– Continuous review, evaluation, and change to meet demands.

DYNAMIC RESTRICTIONS– Those restrictions imposed by the local facility on an “as needed” basis to manage unpredictable fluctuations in traffic demands.

# H

HAA–
(See HEIGHT ABOVE AIRPORT.)

HAL–
(See HEIGHT ABOVE LANDING.)

HANDOFF– An action taken to transfer the radar identification of an aircraft from one controller to another if the aircraft will enter the receiving controller's airspace and radio communications with the aircraft will be transferred.

HAT–
(See HEIGHT ABOVE TOUCHDOWN.)

***HAVE NUMBERS–*** Used by pilots to inform ATC that they have received runway, wind, and altimeter information only.

HAZARDOUS WEATHER INFORMATION– Summary of significant meteorological information (SIGMET/WS), convective significant meteorological information (convective SIGMET/WST), urgent pilot weather reports (urgent PIREP/UUA), center weather advisories (CWA), airmen's meteorological information (AIRMET/WA) and any other weather such as isolated thunderstorms that are rapidly developing and increasing in intensity, or low ceilings and visibilities that are becoming widespread which is considered significant and are not included in a current hazardous weather advisory.

***HEAVY (AIRCRAFT)–***
(See AIRCRAFT CLASSES.)

HEIGHT ABOVE AIRPORT (HAA)– The height of the Minimum Descent Altitude above the published airport elevation. This is published in conjunction with circling minimums.
(See MINIMUM DESCENT ALTITUDE.)

HEIGHT ABOVE LANDING (HAL)– The height above a designated helicopter landing area used for helicopter instrument approach procedures.
(Refer to 14 CFR Part 97.)

HEIGHT ABOVE TOUCHDOWN (HAT)– The height of the Decision Height or Minimum Descent Altitude above the highest runway elevation in the touchdown zone (first 3,000 feet of the runway). HAT is published on instrument approach charts in conjunction with all straight-in minimums.
(See DECISION HEIGHT.)
(See MINIMUM DESCENT ALTITUDE.)

HELICOPTER– A heavier-than-air aircraft supported in flight chiefly by the reactions of the air on one or more power-driven rotors on substantially vertical axes.

HELIPAD– A small, designated area, usually with a prepared surface, on a heliport, airport, landing/takeoff area, apron/ramp, or movement area used for takeoff, landing, or parking of helicopters.

HELIPORT– An area of land, water, or structure used or intended to be used for the landing and takeoff of helicopters and includes its buildings and facilities if any.

HELIPORT REFERENCE POINT (HRP)– The geographic center of a heliport.

HERTZ– The standard radio equivalent of frequency in cycles per second of an electromagnetic wave. Kilohertz (kHz) is a frequency of one thousand cycles per second. Megahertz (MHz) is a frequency of one million cycles per second.

HF–
(See HIGH FREQUENCY.)

HF COMMUNICATIONS–
(See HIGH FREQUENCY COMMUNICATIONS.)

HIGH FREQUENCY– The frequency band between 3 and 30 MHz.
(See HIGH FREQUENCY COMMUNICATIONS.)

HIGH FREQUENCY COMMUNICATIONS– High radio frequencies (HF) between 3 and 30 MHz used for air-to-ground voice communication in overseas operations.

HIGH SPEED EXIT–
(See HIGH SPEED TAXIWAY.)

HIGH SPEED TAXIWAY– A long radius taxiway designed and provided with lighting or marking to define the path of aircraft, traveling at high speed (up to 60 knots), from the runway center to a point on the center of a taxiway. Also referred to as long radius exit or turn-off taxiway. The high speed taxiway is

designed to expedite aircraft turning off the runway after landing, thus reducing runway occupancy time.

HIGH SPEED TURNOFF–
(See HIGH SPEED TAXIWAY.)

HOLD FOR RELEASE– Used by ATC to delay an aircraft for traffic management reasons; i.e., weather, traffic volume, etc. Hold for release instructions (including departure delay information) are used to inform a pilot or a controller (either directly or through an authorized relay) that an IFR departure clearance is not valid until a release time or additional instructions have been received.
(See ICAO term HOLDING POINT.)

HOLD–IN–LIEU OF PROCEDURE TURN– A hold–in–lieu of procedure turn shall be established over a final or intermediate fix when an approach can be made from a properly aligned holding pattern. The hold–in–lieu of procedure turn permits the pilot to align with the final or intermediate segment of the approach and/or descend in the holding pattern to an altitude that will permit a normal descent to the final approach fix altitude. The hold–in–lieu of procedure turn is a required maneuver (the same as a procedure turn) unless the aircraft is being radar vectored to the final approach course, when "NoPT" is shown on the approach chart, or when the pilot requests or the controller advises the pilot to make a "straight–in" approach.

HOLD PROCEDURE– A predetermined maneuver which keeps aircraft within a specified airspace while awaiting further clearance from air traffic control. Also used during ground operations to keep aircraft within a specified area or at a specified point while awaiting further clearance from air traffic control.
(See HOLDING FIX.)
(Refer to AIM.)

HOLDING FIX– A specified fix identifiable to a pilot by NAVAIDs or visual reference to the ground used as a reference point in establishing and maintaining the position of an aircraft while holding.
(See FIX.)
(See VISUAL HOLDING.)
(Refer to AIM.)

HOLDING POINT [ICAO]– A specified location, identified by visual or other means, in the vicinity of which the position of an aircraft in flight is maintained in accordance with air traffic control clearances.

HOLDING PROCEDURE–
(See HOLD PROCEDURE.)

HOLD-SHORT POINT– A point on the runway beyond which a landing aircraft with a LAHSO clearance is not authorized to proceed. This point may be located prior to an intersecting runway, taxiway, predetermined point, or approach/departure flight path.

HOLD-SHORT POSITION LIGHTS– Flashing in-pavement white lights located at specified hold-short points.

HOLD-SHORT POSITION MARKING– The painted runway marking located at the hold-short point on all LAHSO runways.

HOLD-SHORT POSITION SIGNS– Red and white holding position signs located alongside the hold-short point.

***HOMING–*** Flight toward a NAVAID, without correcting for wind, by adjusting the aircraft heading to maintain a relative bearing of zero degrees.
(See BEARING.)
(See ICAO term HOMING.)

HOMING [ICAO]– The procedure of using the direction-finding equipment of one radio station with the emission of another radio station, where at least one of the stations is mobile, and whereby the mobile station proceeds continuously towards the other station.

HOVER CHECK– Used to describe when a helicopter/VTOL aircraft requires a stabilized hover to conduct a performance/power check prior to hover taxi, air taxi, or takeoff. Altitude of the hover will vary based on the purpose of the check.

HOVER TAXI– Used to describe a helicopter/VTOL aircraft movement conducted above the surface and in ground effect at airspeeds less than approximately 20 knots. The actual height may vary, and some helicopters may require hover taxi above 25 feet AGL to reduce ground effect turbulence or provide clearance for cargo slingloads.
(See AIR TAXI.)
(See HOVER CHECK.)
(Refer to AIM.)

***HOW DO YOU HEAR ME?–*** A question relating to the quality of the transmission or to determine how well the transmission is being received.

HZ–
(See HERTZ.)

**a.** Nonprecision Approach Runway– An instrument runway served by visual aids and a nonvisual aid providing at least directional guidance adequate for a straight-in approach.

**b.** Precision Approach Runway, Category I– An instrument runway served by ILS and visual aids intended for operations down to 60 m (200 feet) decision height and down to an RVR of the order of 800 m.

**c.** Precision Approach Runway, Category II– An instrument runway served by ILS and visual aids intended for operations down to 30 m (100 feet) decision height and down to an RVR of the order of 400 m.

**d.** Precision Approach Runway, Category III– An instrument runway served by ILS to and along the surface of the runway and:

**1.** Intended for operations down to an RVR of the order of 200 m (no decision height being applicable) using visual aids during the final phase of landing;

**2.** Intended for operations down to an RVR of the order of 50 m (no decision height being applicable) using visual aids for taxiing;

**3.** Intended for operations without reliance on visual reference for landing or taxiing.

Note 1: See Annex 10 Volume I, Part I, Chapter 3, for related ILS specifications.

Note 2: Visual aids need not necessarily be matched to the scale of nonvisual aids provided. The criterion for the selection of visual aids is the conditions in which operations are intended to be conducted.

INTEGRITY– The ability of a system to provide timely warnings to users when the system should not be used for navigation.

INTERMEDIATE APPROACH SEGMENT–

(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

INTERMEDIATE APPROACH SEGMENT [ICAO]– That segment of an instrument approach procedure between either the intermediate approach fix and the final approach fix or point, or between the end of a reversal, race track or dead reckoning track procedure and the final approach fix or point, as appropriate.

INTERMEDIATE FIX– The fix that identifies the beginning of the intermediate approach segment of an instrument approach procedure. The fix is not normally identified on the instrument approach chart as an intermediate fix (IF).

(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

INTERMEDIATE LANDING– On the rare occasion that this option is requested, it should be approved. The departure center, however, must advise the ATCSCC so that the appropriate delay is carried over and assigned at the intermediate airport. An intermediate landing airport within the arrival center will not be accepted without coordination with and the approval of the ATCSCC.

INTERNATIONAL AIRPORT– Relating to international flight, it means:

**a.** An airport of entry which has been designated by the Secretary of Treasury or Commissioner of Customs as an international airport for customs service.

**b.** A landing rights airport at which specific permission to land must be obtained from customs authorities in advance of contemplated use.

**c.** Airports designated under the Convention on International Civil Aviation as an airport for use by international commercial air transport and/or international general aviation.

(See ICAO term INTERNATIONAL AIRPORT.)

(Refer to Chart Supplement U.S.)

INTERNATIONAL AIRPORT [ICAO]– Any airport designated by the Contracting State in whose territory it is situated as an airport of entry and departure for international air traffic, where the formalities incident to customs, immigration, public health, animal and plant quarantine and similar procedures are carried out.

INTERNATIONAL CIVIL AVIATION ORGANIZATION [ICAO]– A specialized agency of the United Nations whose objective is to develop the principles and techniques of international air navigation and to foster planning and development of international civil air transport.

INTERNATIONAL NOTICES– A notice containing flight prohibitions, potential hostile situations, or other international/ foreign oceanic airspace matters. These notices can be found on the International Notices website, updated every 28 days.

INTERROGATOR– The ground-based surveillance radar beacon transmitter-receiver, which normally scans in synchronism with a primary radar, transmitting discrete radio signals which repetitiously request all transponders on the mode being used to reply. The replies received are mixed with the primary radar returns and displayed on the same plan position indicator (radar scope). Also, applied to the airborne element of the TACAN/DME system.

(See TRANSPONDER.)

(Refer to AIM.)

INTERSECTING RUNWAYS– Two or more runways which cross or meet within their lengths.

(See INTERSECTION.)

INTERSECTION–

**a.** A point defined by any combination of courses, radials, or bearings of two or more navigational aids.

**b.** Used to describe the point where two runways, a runway and a taxiway, or two taxiways cross or meet.

INTERSECTION DEPARTURE– A departure from any runway intersection except the end of the runway.

(See INTERSECTION.)

INTERSECTION TAKEOFF–

(See INTERSECTION DEPARTURE.)

IR–

(See IFR MILITARY TRAINING ROUTES.)

IRREGULAR SURFACE– A surface that is open for use but not per regulations.

ISR–

(See INCREASED SEPARATION REQUIRED.)

1300 Hz tone, which is received aurally and visually by compatible airborne equipment.

(See INSTRUMENT LANDING SYSTEM.)

(See MARKER BEACON.)

(Refer to AIM.)

MILES-IN-TRAIL– A specified distance between aircraft, normally, in the same stratum associated with the same destination or route of flight.

MILITARY AUTHORITY ASSUMES RESPONSIBILITY FOR SEPARATION OF AIRCRAFT (MARSA)– A condition whereby the military services involved assume responsibility for separation between participating military aircraft in the ATC system. It is used only for required IFR operations which are specified in letters of agreement or other appropriate FAA or military documents.

MILITARY LANDING ZONE– A landing strip used exclusively by the military for training. A military landing zone does not carry a runway designation.

MILITARY OPERATIONS AREA–

(See SPECIAL USE AIRSPACE.)

MILITARY TRAINING ROUTES– Airspace of defined vertical and lateral dimensions established for the conduct of military flight training at airspeeds in excess of 250 knots IAS.

(See IFR MILITARY TRAINING ROUTES.)

(See VFR MILITARY TRAINING ROUTES.)

MINIMA–

(See MINIMUMS.)

MINIMUM CROSSING ALTITUDE (MCA)– The lowest altitude at certain fixes at which an aircraft must cross when proceeding in the direction of a higher minimum en route IFR altitude (MEA).

(See MINIMUM EN ROUTE IFR ALTITUDE.)

MINIMUM DESCENT ALTITUDE (MDA)– The lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circle-to-land maneuvering in execution of a standard instrument approach procedure where no electronic glideslope is provided.

(See NONPRECISION APPROACH PROCEDURE.)

MINIMUM EN ROUTE IFR ALTITUDE (MEA)– The lowest published altitude between radio fixes which assures acceptable navigational signal coverage and meets obstacle clearance requirements between those fixes. The MEA prescribed for a Federal airway or segment thereof, area navigation low or high route, or other direct route applies to the entire width of the airway, segment, or route between the radio fixes defining the airway, segment, or route.

(Refer to 14 CFR Part 91.)

(Refer to 14 CFR Part 95.)

(Refer to AIM.)

MINIMUM FRICTION LEVEL– The friction level specified in AC 150/5320-12, Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces, that represents the minimum recommended wet pavement surface friction value for any turbojet aircraft engaged in LAHSO. This value will vary with the particular friction measurement equipment used.

MINIMUM FUEL– Indicates that an aircraft's fuel supply has reached a state where, upon reaching the destination, it can accept little or no delay. This is not an emergency situation but merely indicates an emergency situation is possible should any undue delay occur.

(Refer to AIM.)

MINIMUM HOLDING ALTITUDE– The lowest altitude prescribed for a holding pattern which assures navigational signal coverage, communications, and meets obstacle clearance requirements.

MINIMUM IFR ALTITUDES (MIA)– Minimum altitudes for IFR operations as prescribed in 14 CFR Part 91. These altitudes are published on aeronautical charts and prescribed in 14 CFR Part 95 for airways and routes, and in 14 CFR Part 97 for standard instrument approach procedures. If no applicable minimum altitude is prescribed in 14 CFR Part 95 or 14 CFR Part 97, the following minimum IFR altitude applies:

**a.** In designated mountainous areas, 2,000 feet above the highest obstacle within a horizontal distance of 4 nautical miles from the course to be flown; or

**b.** Other than mountainous areas, 1,000 feet above the highest obstacle within a horizontal distance of 4 nautical miles from the course to be flown; or

**c.** As otherwise authorized by the Administrator or assigned by ATC.

(See MINIMUM CROSSING ALTITUDE.)
(See MINIMUM EN ROUTE IFR ALTITUDE.)
(See MINIMUM OBSTRUCTION CLEARANCE ALTITUDE.)
(See MINIMUM SAFE ALTITUDE.)
(See MINIMUM VECTORING ALTITUDE.)
(Refer to 14 CFR Part 91.)

MINIMUM OBSTRUCTION CLEARANCE ALTITUDE (MOCA)– The lowest published altitude in effect between radio fixes on VOR airways, off-airway routes, or route segments which meets obstacle clearance requirements for the entire route segment and which assures acceptable navigational signal coverage only within 25 statute (22 nautical) miles of a VOR.

(Refer to 14 CFR Part 91.)
(Refer to 14 CFR Part 95.)

MINIMUM RECEPTION ALTITUDE (MRA)– The lowest altitude at which an intersection can be determined.

(Refer to 14 CFR Part 95.)

MINIMUM SAFE ALTITUDE (MSA)–

**a.** The minimum altitude specified in 14 CFR Part 91 for various aircraft operations.

**b.** Altitudes depicted on approach charts which provide at least 1,000 feet of obstacle clearance for emergency use. These altitudes will be identified as Minimum Safe Altitudes or Emergency Safe Altitudes and are established as follows:

**1.** Minimum Safe Altitude (MSA). Altitudes depicted on approach charts which provide at least 1,000 feet of obstacle clearance within a 25-mile radius of the navigation facility, waypoint, or airport reference point upon which the MSA is predicated. MSAs are for emergency use only and do not necessarily assure acceptable navigational signal coverage.

(See ICAO term Minimum Sector Altitude.)

**2.** Emergency Safe Altitude (ESA). Altitudes depicted on approach charts which provide at least 1,000 feet of obstacle clearance in nonmountainous areas and 2,000 feet of obstacle clearance in designated mountainous areas within a 100-mile radius of the navigation facility or waypoint used as the ESA center. These altitudes are normally used only in military procedures and are identified on published procedures as "Emergency Safe Altitudes."

MINIMUM SAFE ALTITUDE WARNING (MSAW)– A function of the EAS and STARS computer that aids the controller by alerting him/her when a tracked Mode C equipped aircraft is below or is predicted by the computer to go below a predetermined minimum safe altitude.

(Refer to AIM.)

MINIMUM SECTOR ALTITUDE [ICAO]– The lowest altitude which may be used under emergency conditions which will provide a minimum clearance of 300 m (1,000 feet) above all obstacles located in an area contained within a sector of a circle of 46 km (25 NM) radius centered on a radio aid to navigation.

MINIMUMS– Weather condition requirements established for a particular operation or type of operation; e.g., IFR takeoff or landing, alternate airport for IFR flight plans, VFR flight, etc.

(See IFR CONDITIONS.)
(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)
(See LANDING MINIMUMS.)
(See VFR CONDITIONS.)
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

MINIMUM VECTORING ALTITUDE (MVA)– The lowest MSL altitude at which an IFR aircraft will be vectored by a radar controller, except as otherwise authorized for radar approaches, departures, and missed approaches. The altitude meets IFR obstacle clearance criteria. It may be lower than the published MEA along an airway or J-route segment. It may be utilized for radar vectoring only upon the controller's determination that an adequate radar return is being received from the aircraft being controlled. Charts depicting minimum vectoring altitudes are normally available only to the controllers and not to pilots.

(Refer to AIM.)

MINUTES-IN-TRAIL– A specified interval between aircraft expressed in time. This method would more likely be utilized regardless of altitude.

MIS–

(See METEOROLOGICAL IMPACT STATEMENT.)

***MISSED APPROACH–***

**a.** A maneuver conducted by a pilot when an instrument approach cannot be completed to a

# N

NAS–

(See NATIONAL AIRSPACE SYSTEM.)

NAT HLA–

(See NORTH ATLANTIC HIGH LEVEL AIRSPACE.)

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

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

(See FLIGHT INFORMATION REGION.)

NATIONAL FLIGHT DATA CENTER (NFDC)– A facility in Washington D.C., established by FAA to operate a central aeronautical information service for the collection, validation, and dissemination of aeronautical data in support of the activities of government, industry, and the aviation community. The information is published in the National Flight Data Digest.

(See NATIONAL FLIGHT DATA DIGEST.)

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

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

NAVAID–

(See NAVIGATIONAL AID.)

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

**a.** T– Terminal.

**b.** L– Low altitude.

**c.** H– High altitude.

Note: The normal service range for T, L, and H class aids is found in the AIM. Certain operational requirements make it necessary to use some of these aids at greater service ranges than specified. Extended range is made possible through flight inspection determinations. Some aids also have lesser service range due to location, terrain, frequency protection, etc. Restrictions to service range are listed in Chart Supplement U.S.

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

(Refer to 14 CFR Part 91.)

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

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

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

**b.** RNAV specification. A navigation specification based on area navigation that does not include the requirement for performance monitoring and alert-

ing, designated by the prefix RNAV; e.g., RNAV 5, RNAV 1.

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

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

(See AIR NAVIGATION FACILITY.)

NAVSPEC-

(See NAVIGATION SPECIFICATION [ICAO].)

NBCAP AIRSPACE–

(See NATIONAL BEACON CODE ALLOCATION PLAN AIRSPACE.)

NDB–

(See NONDIRECTIONAL BEACON.)

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

***NEGATIVE CONTACT–*** Used by pilots to inform ATC that:

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

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

NFDC–

(See NATIONAL FLIGHT DATA CENTER.)

NFDD–

(See NATIONAL FLIGHT DATA DIGEST.)

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

(See ICAO term NIGHT.)

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

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

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

(Refer to AIM.)

***NO GYRO VECTOR–***

(See NO GYRO APPROACH.)

***NO TRANSGRESSION ZONE (NTZ)–*** The NTZ is a 2,000 foot wide zone, located equidistant between parallel runway or SOIA final approach courses, in which flight is normally not allowed.

NONAPPROACH CONTROL TOWER– Authorizes aircraft to land or takeoff at the airport controlled by the tower or to transit the Class D airspace. The primary function of a nonapproach control tower is the sequencing of aircraft in the traffic pattern and on the landing area. Nonapproach control towers also separate aircraft operating under instrument flight rules clearances from approach controls and centers. They provide ground control services to aircraft, vehicles, personnel, and equipment on the airport movement area.

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

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

(See COOPERATIVE SURVEILLANCE.)
(See RADAR.)

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

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

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

NONPRECISION APPROACH–
(See NONPRECISION APPROACH PROCEDURE.)

NONPRECISION APPROACH PROCEDURE– A standard instrument approach procedure in which no electronic glideslope is provided; e.g., VOR, TACAN, NDB, LOC, ASR, LDA, or SDF approaches.

NONRADAR– Precedes other terms and generally means without the use of radar, such as:

**a.** Nonradar Approach. Used to describe instrument approaches for which course guidance on final approach is not provided by ground-based precision or surveillance radar. Radar vectors to the final approach course may or may not be provided by ATC. Examples of nonradar approaches are VOR, NDB, TACAN, ILS, RNAV, and GLS approaches.
(See FINAL APPROACH COURSE.)
(See FINAL APPROACH-IFR.)
(See INSTRUMENT APPROACH PROCEDURE.)
(See RADAR APPROACH.)

**b.** Nonradar Approach Control. An ATC facility providing approach control service without the use of radar.
(See APPROACH CONTROL FACILITY.)
(See APPROACH CONTROL SERVICE.)

**c.** Nonradar Arrival. An aircraft arriving at an airport without radar service or at an airport served by a radar facility and radar contact has not been established or has been terminated due to a lack of radar service to the airport.
(See RADAR ARRIVAL.)
(See RADAR SERVICE.)

**d.** Nonradar Route. A flight path or route over which the pilot is performing his/her own navigation. The pilot may be receiving radar separation, radar monitoring, or other ATC services while on a nonradar route.
(See RADAR ROUTE.)

**e.** Nonradar Separation. The spacing of aircraft in accordance with established minima without the use of radar; e.g., vertical, lateral, or longitudinal separation.
(See RADAR SEPARATION.)

NON–RESTRICTIVE ROUTING (NRR)– Portions of a proposed route of flight where a user can flight plan the most advantageous flight path with no requirement to make reference to ground–based NAVAIDs.

NOPAC–
(See NORTH PACIFIC.)

***NORDO*** (No Radio)– Aircraft that cannot or do not communicate by radio when radio communication is required are referred to as "NORDO."
(See LOST COMMUNICATIONS.)

NORMAL OPERATING ZONE (NOZ)– The NOZ is the operating zone within which aircraft flight remains during normal independent simultaneous parallel ILS approaches.

NORTH AMERICAN ROUTE– A numerically coded route preplanned over existing airway and route systems to and from specific coastal fixes serving the North Atlantic. North American Routes consist of the following:

**a.** Common Route/Portion. That segment of a North American Route between the inland navigation facility and the coastal fix.

**b.** Noncommon Route/Portion. That segment of a North American Route between the inland navigation facility and a designated North American terminal.

**c.** Inland Navigation Facility. A navigation aid on a North American Route at which the common route and/or the noncommon route begins or ends.

**d.** Coastal Fix. A navigation aid or intersection where an aircraft transitions between the domestic route structure and the oceanic route structure.

NORTH AMERICAN ROUTE PROGRAM (NRP)– The NRP is a set of rules and procedures which are designed to increase the flexibility of user flight planning within published guidelines.

NORTH ATLANTIC HIGH LEVEL AIRSPACE (NAT HLA)– That volume of airspace (as defined in ICAO Document 7030) between FL 285 and FL 420 within the Oceanic Control Areas of Bodo Oceanic, Gander Oceanic, New York Oceanic East, Reykjavik, Santa Maria, and Shanwick, excluding the Shannon and Brest Ocean Transition Areas. ICAO Doc 007 *North Atlantic Operations and Airspace Manual* provides detailed information on related aircraft and operational requirements.

NORTH PACIFIC– An organized route system between the Alaskan west coast and Japan.

NOT STANDARD– Varying from what is expected or published. For use in NOTAMs only.

NOT STD-
(See NOT STANDARD.)

NOTAM–
(See NOTICE TO AIRMEN.)

NOTAM [ICAO]– A notice containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

**a.** I Distribution– Distribution by means of telecommunication.

**b.** II Distribution– Distribution by means other than telecommunications.

NOTICE TO AIRMEN (NOTAM)– A notice containing information (not known sufficiently in advance to publicize by other means) concerning the establishment, condition, or change in any component (facility, service, or procedure of, or hazard in the National Airspace System) the timely knowledge of which is essential to personnel concerned with flight operations.

NOTAM(D)– A NOTAM given (in addition to local dissemination) distant dissemination beyond the area of responsibility of the Flight Service Station. These NOTAMs will be stored and available until canceled.

**c.** FDC NOTAM– A NOTAM regulatory in nature, transmitted by USNOF and given system wide dissemination.
(See ICAO term NOTAM.)

NRR–
(See NON–RESTRICTIVE ROUTING.)

NRS–
(See NAVIGATION REFERENCE SYSTEM.)

***NUMEROUS TARGETS VICINITY (LOCATION)–*** A traffic advisory issued by ATC to advise pilots that targets on the radar scope are too numerous to issue individually.
(See TRAFFIC ADVISORIES.)

and the distance (range) from the touchdown point on the runway as displayed on the radar scope.

Note: The abbreviation "PAR" is also used to denote preferential arrival routes in ARTCC computers.

(See GLIDEPATH.)

(See PAR.)

(See PREFERENTIAL ROUTES.)

(See ICAO term PRECISION APPROACH RADAR.)

(Refer to AIM.)

PRECISION APPROACH RADAR [ICAO]– Primary radar equipment used to determine the position of an aircraft during final approach, in terms of lateral and vertical deviations relative to a nominal approach path, and in range relative to touchdown.

Note: Precision approach radars are designed to enable pilots of aircraft to be given guidance by radio communication during the final stages of the approach to land.

PRECISION OBSTACLE FREE ZONE (POFZ)– An 800 foot wide by 200 foot long area centered on the runway centerline adjacent to the threshold designed to protect aircraft flying precision approaches from ground vehicles and other aircraft when ceiling is less than 250 feet or visibility is less than 3/4 statute mile (or runway visual range below 4,000 feet.)

PRECISION RUNWAY MONITOR (PRM) SYSTEM– Provides air traffic controllers monitoring the NTZ during simultaneous close parallel PRM approaches with precision, high update rate secondary surveillance data. The high update rate surveillance sensor component of the PRM system is only required for specific runway or approach course separation. The high resolution color monitoring display, Final Monitor Aid (FMA) of the PRM system, or other FMA with the same capability, presents NTZ surveillance track data to controllers along with detailed maps depicting approaches and no transgression zone and is required for all simultaneous close parallel PRM NTZ monitoring operations.

(Refer to AIM)

PREDICTIVE WIND SHEAR ALERT SYSTEM (PWS)– A self–contained system used on board some aircraft to alert the flight crew to the presence of a potential wind shear. PWS systems typically monitor 3 miles ahead and 25 degrees left and right of the aircraft's heading at or below 1200' AGL. Departing flights may receive a wind shear alert after they start the takeoff roll and may elect to abort the takeoff. Aircraft on approach receiving an alert may elect to go around or perform a wind shear escape maneuver.

PREFERENTIAL ROUTES– Preferential routes (PDRs, PARs, and PDARs) are adapted in ARTCC computers to accomplish inter/intrafacility controller coordination and to assure that flight data is posted at the proper control positions. Locations having a need for these specific inbound and outbound routes normally publish such routes in local facility bulletins, and their use by pilots minimizes flight plan route amendments. When the workload or traffic situation permits, controllers normally provide radar vectors or assign requested routes to minimize circuitous routing. Preferential routes are usually confined to one ARTCC's area and are referred to by the following names or acronyms:

**a.** Preferential Departure Route (PDR). A specific departure route from an airport or terminal area to an en route point where there is no further need for flow control. It may be included in an Instrument Departure Procedure (DP) or a Preferred IFR Route.

**b.** Preferential Arrival Route (PAR). A specific arrival route from an appropriate en route point to an airport or terminal area. It may be included in a Standard Terminal Arrival (STAR) or a Preferred IFR Route. The abbreviation "PAR" is used primarily within the ARTCC and should not be confused with the abbreviation for Precision Approach Radar.

**c.** Preferential Departure and Arrival Route (PDAR). A route between two terminals which are within or immediately adjacent to one ARTCC's area. PDARs are not synonymous with Preferred IFR Routes but may be listed as such as they do accomplish essentially the same purpose.

(See PREFERRED IFR ROUTES.)

PREFERRED IFR ROUTES– Routes established between busier airports to increase system efficiency and capacity. They normally extend through one or more ARTCC areas and are designed to achieve balanced traffic flows among high density terminals. IFR clearances are issued on the basis of these routes except when severe weather avoidance procedures or other factors dictate otherwise. Preferred IFR Routes are listed in the Chart Supplement U.S. If a flight is planned to or from an area having such routes but the departure or arrival point is not listed in the Chart Supplement U.S., pilots may use that part of a

Preferred IFR Route which is appropriate for the departure or arrival point that is listed. Preferred IFR Routes are correlated with DPs and STARs and may be defined by airways, jet routes, direct routes between NAVAIDs, Waypoints, NAVAID radials/DME, or any combinations thereof.

(See CENTER'S AREA.)

(See INSTRUMENT DEPARTURE PROCEDURE.)

(See PREFERENTIAL ROUTES.)

(See STANDARD TERMINAL ARRIVAL.)

(Refer to CHART SUPPLEMENT U.S.)

PRE-FLIGHT PILOT BRIEFING–

(See PILOT BRIEFING.)

PREVAILING VISIBILITY–

(See VISIBILITY.)

PRIMARY RADAR TARGET– An analog or digital target, exclusive of a secondary radar target, presented on a radar display.

PRM–

(See AREA NAVIGATION (RNAV) GLOBAL POSITIONING SYSTEM (GPS) PRECISION RUNWAY MONITORING (PRM) APPROACH.)

(See PRM APPROACH.)

(See PRECISION RUNWAY MONITOR SYSTEM.)

PRM APPROACH– An instrument approach procedure titled ILS PRM, RNAV PRM, LDA PRM, or GLS PRM conducted to parallel runways separated by less than 4,300 feet and at least 3,000 feet where independent closely spaced approaches are permitted. Use of an enhanced display with alerting, a No Transgression Zone (NTZ), secondary monitor frequency, pilot PRM training, and publication of an Attention All Users Page are required for all PRM approaches. Depending on the runway spacing, the approach courses may be parallel or one approach course must be offset. PRM procedures are also used to conduct Simultaneous Offset Instrument Approach (SOIA) operations. In SOIA, one straight–in ILS PRM, RNAV PRM, GLS PRM, and one offset LDA PRM, RNAV PRM or GLS PRM approach are utilized. PRM procedures are terminated and a visual segment begins at the offset approach missed approach point where the minimum distance between the approach courses is 3000 feet. Runway spacing can be as close as 750 feet.

(Refer to AIM.)

PROCEDURAL CONTROL [ICAO]– Term used to indicate that information derived from an ATS surveillance system is not required for the provision of air traffic control service.

PROCEDURAL SEPARATION [ICAO]– The separation used when providing procedural control.

PROCEDURE TURN– The maneuver prescribed when it is necessary to reverse direction to establish an aircraft on the intermediate approach segment or final approach course. The outbound course, direction of turn, distance within which the turn must be completed, and minimum altitude are specified in the procedure. However, unless otherwise restricted, the point at which the turn may be commenced and the type and rate of turn are left to the discretion of the pilot.

(See ICAO term PROCEDURE TURN.)

PROCEDURE TURN [ICAO]– A maneuver in which a turn is made away from a designated track followed by a turn in the opposite direction to permit the aircraft to intercept and proceed along the reciprocal of the designated track.

Note 1: Procedure turns are designated "left" or "right" according to the direction of the initial turn.

Note 2: Procedure turns may be designated as being made either in level flight or while descending, according to the circumstances of each individual approach procedure.

PROCEDURE TURN INBOUND– That point of a procedure turn maneuver where course reversal has been completed and an aircraft is established inbound on the intermediate approach segment or final approach course. A report of "procedure turn inbound" is normally used by ATC as a position report for separation purposes.

(See FINAL APPROACH COURSE.)

(See PROCEDURE TURN.)

(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

PROFILE DESCENT– An uninterrupted descent (except where level flight is required for speed adjustment; e.g., 250 knots at 10,000 feet MSL) from cruising altitude/level to interception of a glideslope or to a minimum altitude specified for the initial or intermediate approach segment of a nonprecision instrument approach. The profile descent normally

# Q

Q ROUTE– ‘Q’ is the designator assigned to published RNAV routes used by the United States.

QFE– The atmospheric pressure at aerodrome elevation (or at runway threshold).

QNE– The barometric pressure used for the standard altimeter setting (29.92 inches Hg.).

QNH– The barometric pressure as reported by a particular station.

QUADRANT– A quarter part of a circle, centered on a NAVAID, oriented clockwise from magnetic north as follows: NE quadrant 000-089, SE quadrant 090-179, SW quadrant 180-269, NW quadrant 270-359.

QUEUING–

(See STAGING/QUEUING.)

QUICK LOOK– A feature of the EAS and STARS which provides the controller the capability to display full data blocks of tracked aircraft from other control positions.

# R

RADAR– A device that provides information on range, azimuth, and/or elevation of objects by measuring the time interval between transmission and reception of directional radio pulses and correlating the angular orientation of the radiated antenna beam or beams in azimuth and/or elevation.

**a.** Primary Radar– A radar system in which a minute portion of a radio pulse transmitted from a site is reflected by an object and then received back at that site for processing and display at an air traffic control facility.

**b.** Secondary Radar/Radar Beacon (ATCRBS)– A radar system in which the object to be detected is fitted with cooperative equipment in the form of a radio receiver/transmitter (transponder). Radar pulses transmitted from the searching transmitter/receiver (interrogator) site are received in the cooperative equipment and used to trigger a distinctive transmission from the transponder. This reply transmission, rather than a reflected signal, is then received back at the transmitter/receiver site for processing and display at an air traffic control facility.

(See COOPERATIVE SURVEILLANCE.)
(See INTERROGATOR.)
(See NON–COOPERATIVE SURVEILLANCE.)
(See TRANSPONDER.)
(See ICAO term RADAR.)
(Refer to AIM.)

RADAR [ICAO]– A radio detection device which provides information on range, azimuth and/or elevation of objects.

**a.** Primary Radar– Radar system which uses reflected radio signals.

**b.** Secondary Radar– Radar system wherein a radio signal transmitted from a radar station initiates the transmission of a radio signal from another station.

RADAR ADVISORY– The provision of advice and information based on radar observations.

(See ADVISORY SERVICE.)

RADAR ALTIMETER–

(See RADIO ALTIMETER.)

RADAR APPROACH– An instrument approach procedure which utilizes Precision Approach Radar (PAR) or Airport Surveillance Radar (ASR).

(See AIRPORT SURVEILLANCE RADAR.)
(See INSTRUMENT APPROACH PROCEDURE.)
(See PRECISION APPROACH RADAR.)
(See SURVEILLANCE APPROACH.)
(See ICAO term RADAR APPROACH.)
(Refer to AIM.)

RADAR APPROACH [ICAO]– An approach, executed by an aircraft, under the direction of a radar controller.

RADAR APPROACH CONTROL FACILITY– A terminal ATC facility that uses radar and nonradar capabilities to provide approach control services to aircraft arriving, departing, or transiting airspace controlled by the facility.

(See APPROACH CONTROL SERVICE.)

**a.** Provides radar ATC services to aircraft operating in the vicinity of one or more civil and/or military airports in a terminal area. The facility may provide services of a ground controlled approach (GCA); i.e., ASR and PAR approaches. A radar approach control facility may be operated by FAA, USAF, US Army, USN, USMC, or jointly by FAA and a military service. Specific facility nomenclatures are used for administrative purposes only and are related to the physical location of the facility and the operating service generally as follows:

**1.** Army Radar Approach Control (ARAC) (US Army).

**2.** Radar Air Traffic Control Facility (RATCF) (USN/FAA and USMC/FAA).

**3.** Radar Approach Control (RAPCON) (USAF/FAA, USN/FAA, and USMC/FAA).

**4.** Terminal Radar Approach Control (TRACON) (FAA).

**5.** Airport Traffic Control Tower (ATCT) (FAA). (Only those towers delegated approach control authority.)

RADAR ARRIVAL– An aircraft arriving at an airport served by a radar facility and in radar contact with the facility.

(See NONRADAR.)

RADAR BEACON–
(See RADAR.)

RADAR CLUTTER [ICAO]– The visual indication on a radar display of unwanted signals.

***RADAR CONTACT–***

**a.** Used by ATC to inform an aircraft that it is identified using an approved ATC surveillance source on an air traffic controller's display and that radar flight following will be provided until radar service is terminated. Radar service may also be provided within the limits of necessity and capability. When a pilot is informed of "radar contact," he/she automatically discontinues reporting over compulsory reporting points.
(See ATC SURVEILLANCE SOURCE.)
(See RADAR CONTACT LOST.)
(See RADAR FLIGHT FOLLOWING.)
(See RADAR SERVICE.)
(See RADAR SERVICE TERMINATED.)
(Refer to AIM.)

**b.** The term used to inform the controller that the aircraft is identified and approval is granted for the aircraft to enter the receiving controllers airspace.
(See ICAO term RADAR CONTACT.)

RADAR CONTACT [ICAO]– The situation which exists when the radar blip or radar position symbol of a particular aircraft is seen and identified on a radar display.

***RADAR CONTACT LOST–*** Used by ATC to inform a pilot that the surveillance data used to determine the aircraft's position is no longer being received, or is no longer reliable and radar service is no longer being provided. The loss may be attributed to several factors including the aircraft merging with weather or ground clutter, the aircraft operating below radar line of sight coverage, the aircraft entering an area of poor radar return, failure of the aircraft's equipment, or failure of the surveillance equipment.
(See CLUTTER.)
(See RADAR CONTACT.)

RADAR ENVIRONMENT– An area in which radar service may be provided.
(See ADDITIONAL SERVICES.)
(See RADAR CONTACT.)
(See RADAR SERVICE.)
(See TRAFFIC ADVISORIES.)

RADAR FLIGHT FOLLOWING– The observation of the progress of radar–identified aircraft, whose primary navigation is being provided by the pilot, wherein the controller retains and correlates the aircraft identity with the appropriate target or target symbol displayed on the radar scope.
(See RADAR CONTACT.)
(See RADAR SERVICE.)
(Refer to AIM.)

RADAR IDENTIFICATION– The process of ascertaining that an observed radar target is the radar return from a particular aircraft.
(See RADAR CONTACT.)
(See RADAR SERVICE.)

RADAR IDENTIFIED AIRCRAFT– An aircraft, the position of which has been correlated with an observed target or symbol on the radar display.
(See RADAR CONTACT.)
(See RADAR CONTACT LOST.)

RADAR MONITORING–
(See RADAR SERVICE.)

RADAR NAVIGATIONAL GUIDANCE–
(See RADAR SERVICE.)

RADAR POINT OUT– An action taken by a controller to transfer the radar identification of an aircraft to another controller if the aircraft will or may enter the airspace or protected airspace of another controller and radio communications will not be transferred.

RADAR REQUIRED– A term displayed on charts and approach plates and included in FDC NOTAMs to alert pilots that segments of either an instrument approach procedure or a route are not navigable because of either the absence or unusability of a NAVAID. The pilot can expect to be provided radar navigational guidance while transiting segments labeled with this term.
(See RADAR ROUTE.)
(See RADAR SERVICE.)

RADAR ROUTE– A flight path or route over which an aircraft is vectored. Navigational guidance and altitude assignments are provided by ATC.
(See FLIGHT PATH.)
(See ROUTE.)

RADAR SEPARATION–
(See RADAR SERVICE.)

RADAR SERVICE– A term which encompasses one or more of the following services based on the use of

# 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.)

TELEPHONE INFORMATION BRIEFING SERVICE– A continuous telephone recording of meteorological and/or aeronautical information.
(Refer to AIM.)

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

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.

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# BRIEFING GUIDE

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

**Initiated By: AJV-0**
**Vice President, Mission Support Services**

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**1. PARAGRAPH NUMBER AND TITLE:**
1−2−6. ABBREVIATIONS
2−1−4. OPERATIONAL PRIORITY
2−3−2. EN ROUTE DATA ENTRIES
4−2−5. ROUTE OR ALTITUDE AMENDMENTS

**2. BACKGROUND:** This Editorial Correction was requested by the Support Manager for Denver Air Route Traffic Control Center (ARTCC). Action was requested for the removal of all references of the High Altitude Redesign (HAR) program in the Pilot/Controller Glossary. The Denver training specialist conferred with the Air Traffic Control Systems Command Center (ATCSCC) Airspace and Procedures (A&P) Office (AJR−12), and the Group Manager, Aeronautical Charting Group AJV−A, confirming that the program is no longer active and that there is no longer an office supporting the program.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **1−2−6. ABBREVIATIONS** | **1−2−6. ABBREVIATIONS** |
| As used in this order, the abbreviations listed below have the following meanings indicated. (See TBL 1−2−1.) | No Change |
| ***TBL 1−2−1*** **FAA Order JO 7110.65 Abbreviations** | No Change |
| HAR . . . . . High Altitude Redesign | Delete |

| OLD | NEW |
|---|---|
| **2−1−4. OPERATIONAL PRIORITY** | **2−1−4. OPERATIONAL PRIORITY** |
| **Title** through **n** ***REFERENCE*** | No Change |
| **o.** Aircraft operating under the North American Route Program (NRP) and in airspace identified in the High Altitude Redesign (HAR) program, are not subject to route limiting restrictions (e.g., published preferred IFR routes, letter of agreement requirements, standard operating procedures). | **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.* | No Change |

| OLD | NEW |
|---|---|
| **2−3−2. EN ROUTE DATA ENTRIES** | **2−3−2. EN ROUTE DATA ENTRIES** |
| **Title** through **a** | No Change |

**OLD**

***TBL 2–3–1***

| Block | Information Recorded |
|---|---|
| 26. | Pertinent remarks, minimum fuel, point out/radar vector/speed adjustment information or sector/position number (when applicable in accordance with para 2–2–1, Recording Information), or NRP. High Altitude Redesign (HAR) or Point–to–point (PTP) may be used at facilities actively using these programs. |

**NEW**

***TBL 2–3–1***

| Block | Information Recorded |
|---|---|
| 26. | Pertinent remarks, minimum fuel, point out/radar vector/speed adjustment information or sector/position number (when applicable in accordance with para 2–2–1, Recording Information), or NRP. |

**OLD**

**4–2–5. ROUTE OR ALTITUDE AMENDMENTS**

**Title** through **c** ***REFERENCE***

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

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

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

**NEW**

**4–2–5. ROUTE OR ALTITUDE AMENDMENTS**

No Change

**d**. Air traffic control specialists should avoid route and/or altitude changes for aircraft participating in the North American Route Program (NRP) and that are displaying "NRP" in the remarks section of their flight plan.

No Change

No Change

**1. PARAGRAPH NUMBER AND TITLE:** 2−1−4. OPERATIONAL PRIORITY

**2. BACKGROUND:** Pilots of "MEDEVAC" flights have expressed a general uncertainty on the proper procedures for being afforded priority handling on MEDEVAC missions. After research of FAA Orders and Publications, inconsistencies were identified with use of the term "MEDEVAC." This has prompted clarifications that will be helpful for pilots, as well as Air Traffic Control (ATC). This Document Change Proposal (DCP) for paragraph 2−1−4.b, Operational Priority, in FAA Order JO 7110.65, Air Traffic Control, eliminates the reference to "MEDEVAC" as a call sign and clarifies how the term "MEDEVAC" is used to gain priority handling. Also, this DCP provides clarification for "AIR EVAC" and "HOSP" flights that request priority handling. The changes to this paragraph will mirror the DCP for paragraph 4−1−2, Operational Priority, in FAA Order JO 7110.10. Additional DCPs are submitted for the Aeronautical Information Manual (AIM), and the Aeronautical Information Publication (AIP) that provide similar clarifications as contained in this document.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **2−1−4. OPERATIONAL PRIORITY** | **2−1−4. OPERATIONAL PRIORITY** |
| **Title** through **a** ***REFERENCE*** | No Change |
| **b.** Provide priority handling to civilian air ambulance flights (call sign "MEDEVAC"). Use of the MEDEVAC call sign indicates that operational priority is requested. When verbally requested, provide priority handling to AIR EVAC, HOSP, and scheduled air carrier/air taxi flights. Assist the pilots of MEDEVAC, AIR EVAC, and HOSP aircraft to avoid areas of significant weather and turbulent conditions. When requested by a pilot, provide notifications to expedite ground handling of patients, vital organs, or urgently needed medical materials. | **b. Treat air ambulance flights as follows:** |
| ***NOTE−***<br>*Good judgment must be used in each situation to facilitate the most expeditious movement of a MEDEVAC aircraft.* | Delete |
| Add | **1. Provide priority handling to civil air ambulance flights when the pilot, in radio transmissions, verbally identifies the flight by stating "MEDEVAC" followed by the FAA authorized call sign or the full civil registration letters/numbers. Good judgment must be used in each situation to facilitate the most expeditious movement of a MEDEVAC aircraft.** |
| Add | ***NOTE−***<br>***If a flight plan includes the letter "L" for "MEDEVAC" and/or includes "MEDEVAC" in Item 11 (Remarks) of the flight plan or Item 18 (Other Information) of an international flight plan, the entries are considered informational in nature only and not an identification for operational priority.*** |
| Add | ***REFERENCE−***<br>***FAA Order JO 7110.65, Para 2−4−20, Aircraft Identification.*** |

| | |
|---|---|
| Add | **2. Provide priority handling to AIR EVAC and HOSP flights when verbally requested by the pilot.** |
| Add | ***NOTE–***<br>***If a flight plan includes "HOSP" or "AIR EVAC" in either Item 11 (Remarks) or Item 18 (Other Information) of an international flight plan, the entries are considered informational in nature only and not an identification for operational priority. For aircraft identification in radio transmissions, civilian pilots will use normal call signs when filing "HOSP" and military pilots will use the "EVAC" call sign.*** |
| Add | **3. Assist the pilots of MEDEVAC, AIR EVAC, and HOSP aircraft to avoid areas of significant weather and adverse conditions.** |
| Add | **4. If requested by a pilot, provide additional assistance (i.e., landline notifications) to expedite ground handling of patients, vital organs, or urgently needed medical materials.** |

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**1. PARAGRAPH NUMBER AND TITLE:** 2–1–25. WHEELS DOWN CHECK

**2. BACKGROUND:** FAA Order JO 7110.65, paragraph 2–1–25, is currently applicable to USA/USAF/USN air traffic controllers only. Additionally, a previous requirement existed in AFI (Air Force Instructions) 11–202v3, General Flight Rules, paragraph 7.7, for the pilot to report gear down on each approach. HQ AFFSA (Air Force Flight Standards Agency)/XO removed this requirement from AFI 11–202v3 in the Fall of 2018. Subsequently, HQ AFFSA/XO and MAJCOM representatives requested HQ AFFSA/XAT to pursue removal of the USAF from the requirements of FAA Order JO 7110.65, paragraph 2–1–25. The elimination of the requirement for pilots to report gear down has actually increased frequency congestion and the Air Traffic Controller's workload since the controller now has to issue "Check Wheels Down" to every aircraft.

**3. CHANGE:**

| **OLD** | **NEW** |
|---|---|
| **2–1–25. WHEELS DOWN CHECK** | **2–1–25. WHEELS DOWN CHECK** |
| *USA/<u>USAF</u>/USN* | *USA/USN* |
| Remind aircraft to check wheels down on each approach unless the pilot has previously reported wheels down for that approach. | No Change |
| ***NOTE–***<br>*The intent is solely to remind the pilot to lower the wheels, not to place responsibility on the controller.* | No Change |

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**1. PARAGRAPH NUMBER AND TITLE:** 2−1−29. RVSM OPERATIONS

**2. BACKGROUND:** CFR Part 91.125 requires pressure altitude reporting transponder equipage for operation in U.S. Class A airspace (FL180−600). 91.215(d) states that if a transponder becomes inoperative enroute, a request to continue flight with an inoperative transponder may be made to the Air Traffic Control (ATC) facility having jurisdiction over the airspace. ATC can elect to allow the aircraft to remain in Class A airspace. The requirements do not change for Reduced Vertical Separation Minimum (RVSM) airspace (FL290−410).

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **2−1−29. RVSM OPERATIONS** | **2−1−29. RVSM OPERATIONS** |
| Title through **f** ***REFERENCE*** | No Change |
| Add | **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.** |
| Add | ***NOTE−***<br>***In a transponder out situation, the aircraft's altitude−keeping capabilities required for flight in RVSM airspace should remain operational.*** |
| Add | ***REFERENCE−***<br>***FAA Order JO 7110.65, Para 4−5−1, Vertical Separation Minima.***<br>***FAA Order JO 7110.65, Para 2−3−8, Aircraft Equipment Suffix.***<br>***14 CFR Section 91.215 ATC Transponder and Altitude Reporting Equipment and Use.***<br>***Advisory Circular AC 91−85B, Authorization of Aircraft and Operators for Flight in Reduced Vertical Separation Minimum (RVSM) Airspace.*** |

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**1. PARAGRAPH NUMBER AND TITLE:** 2−6−4. ISSUING WEATHER AND CHAFF AREAS

**2. BACKGROUND:** A number of incidents involving a lack of timely and accurate weather information issued to pilots deviating for weather has initiated a review of this paragraph. The initial review considered that the current wording of paragraph 2−6−4h3 might foster confusion regarding controller responsibility. Specifically, the word "additional" used in the paragraph may lead controllers to assume that the previous sector responsible for the deviating aircraft would have issued pertinent weather affecting the aircraft's current and future route of flight. Such an assumption could result in pilots not receiving relevant weather information, placing them in potentially dangerous situations. A subsequent review indicated that while the paragraph is written accurately, a note should be added to clarify the intent of the paragraph.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **2−6−4. ISSUING WEATHER AND CHAFF AREAS** | **2−6−4. ISSUING WEATHER AND CHAFF AREAS** |
| Title through **h2** ***REFERENCE*** | No Change |

| | |
|---|---|
| **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. | No Change |
| Add | ***NOTE–***<br>***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.*** |

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**1. PARAGRAPH NUMBER AND TITLE:** 2–9–3. CONTENT

**2. BACKGROUND:** This paragraph was initially changed to align its content with the format of the ATIS information paragraph in the AIM and AIP. Reference to "certified direct reading instruments" has been removed because equipment requirements are contained in other FAA manuals. It is the responsibility of the Air Traffic Manager to ensure that air traffic facilities have the appropriate equipment. Wording addressing weather observation was moved to a more appropriate location in the weather section.

**3. CHANGE:**

| **OLD** | **NEW** |
|---|---|
| **2–9–3. CONTENT** | **2–9–3. CONTENT** |
| Title through **a4(c)** | No Change |
| **(d)** Present weather consisting of: sky condition, temperature, dew point, altimeter, a density altitude advisory when appropriate, and other pertinent remarks included in the official weather observation. | **(d)** Present weather consisting of: sky condition, temperature, dew point, altimeter, a density altitude advisory when appropriate, and other pertinent remarks included in the official weather observation. **Always include weather observation remarks of lightning, cumulonimbus, and towering cumulus clouds.** |
| Add | ***NOTE–***<br>***ASOS/AWOS is to be considered the primary source of wind direction, velocity, and altimeter data for weather observation purposes at those locations that are so equipped. The ASOS Operator Interface Device (OID) displays the magnetic wind as "MAG WND" in the auxiliary data location in the lower left–hand portion of the screen. Other OID displayed winds are true and are not to be used for operational purposes.*** |
| ***REFERENCE–***<br>*FAA Order JO 7900.5, Surface Weather Observing Table 3–2.* | ***REFERENCE–***<br>*FAA Order JO 7900.5, Surface Weather Observing Table 3–2.*<br>***FAA Order JO 7210.3, Para 10–2–1, Position Duties and Responsibilities.*** |

| | |
|---|---|
| **5.** Instruction approach and runway in use. Temperature and dew point should be reported from certified direct reading sensors when available. Always include weather observation remarks of lightning, cumulonimbus, and towering cumulus clouds. | **5.** Instruction approach and runway in use. |
| ***NOTE–*** *ASOS/AWOS is to be considered the primary source of wind direction, velocity, and altimeter data for weather observation purposes at those locations that are so equipped. The ASOS Operator Interface Device (OID) displays the magnetic wind as "MAG WND" in the auxiliary data location in the lower left–hand portion of the screen. Other OID displayed winds are true and are not to be used for operational purposes.* | Delete |

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**1. PARAGRAPH NUMBER AND TITLE:** 3–3–6. ARRESTING SYSTEM OPERATION

**2. BACKGROUND:** On February 1, 2017, a letter was sent from the Aircraft Owners and Pilots Association (AOPA) to the US NOTAM office requesting evaluation of discontinuing the Notices to Airmen Publication (NTAP). The letter was forwarded to AJV–P12, and AJV–P12 began an internal audit. Priority was given to cleaning up the NTAP, ensuring content was current and valid, and moving the content to HTML in order to be more readily accessible and searchable. Immediately, multiple notices were identified and targeted for removal. The decision to discontinue the NTAP publication entirely and migrate any remaining notices to a new location was a result of the original AOPA letter and significant input from the ATO NOTAM Modernization Committee. The NTAP will be discontinued effective June 18, 2020, including its name, contraction, and definition. Remaining notices will be migrated to either Domestic Notices or International Notices, found on the Air Traffic Plans and Publications website or the Federal NOTAM System (FNS) website as external links.

**3. CHANGE:**

| **OLD** | **NEW** |
|---|---|
| **3–3–6. ARRESTING SYSTEM OPERATION** | **3–3–6. ARRESTING SYSTEM OPERATION** |
| Title through **c** ***PHRASEOLOGY*** | No Change |
| **d.** Inform civil and U.S. Army aircraft whenever rubber supported cables are in place at the approach end of the landing runway, and include the distance of the cables from the threshold. This information may be omitted if it is published in the "Notices to Airmen" publication/DOD FLIP. | **d.** Inform civil and U.S. Army aircraft whenever rubber supported cables are in place at the approach end of the landing runway, and include the distance of the cables from the threshold. This information may be omitted if it is published in the **Domestic Notices webpage, International Notices webpage, or the** DOD FLIP. |
| ***EXAMPLE–*** *"Runway One Four arresting cable one thousand feet from threshold."* | No Change |

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**1. PARAGRAPH NUMBER AND TITLE:**
5−1−3. ATC SURVEILLANCE SOURCE USE
5−5−4. MINIMA

**2. BACKGROUND:** Automatic Dependent Surveillance−Broadcast (ADS−B) is a key NextGen technology in the effort to modernize the National Airspace System (NAS). In most en route airspace, aircraft must be separated by at least 5 NM, and this minima was supported by the original ADS−B safety risk management documents. Currently, en route facilities can use reduced separation minima of 3 NM at FL 230 and below using secondary surveillance radar, but only when the aircraft are in relatively close proximity to the radar antenna. The recent deployment of track−based display mode into ERAM and concurrent improvements in ADS−B data processing will allow en route facilities to expand the use of 3 NM separation beyond the limitations imposed by radar.

**3. CHANGE:**

| **OLD** | **NEW** |
|---|---|
| **5−1−3. ATC SURVEILLANCE SOURCE USE** | **5−1−3. ATC SURVEILLANCE SOURCE USE** |
| Title through **b** | No Change |
| **c.** All procedures and requirements relating to ATC services using secondary radar targets apply to ATC services provided to targets derived from ADS−B and WAM. | No Change |
| ***NOTE−***<br>*Targets derived from ADS−B and/or WAM cannot be used to provide 3NM separation in the EAS. 3NM targets are not derived from ADS−B and/or WAM within the EAS.* | ***NOTE−***<br>*Targets derived from WAM cannot be used to provide 3 NM separation in the EAS. 3 NM targets are not derived from WAM within the EAS.* |
| ***REFERENCE−***<br>*FAA Order JO 7110.65, Para4−1−2, Exceptions.*<br>*FAA Order JO 7110.65, Para 4−4−2, Route Structure Transitions*<br>*FAA Order JO 7110.65, Para 5−5−1, Application*<br>*FAA Order JO 7110.65, Para 6−5−4, Minima Along Other Than Established Airways or Routes*<br>*FAA Order JO 7110.65, Chapter 6, Nonradar*<br>*FAA Order JO 7110.65, Para 5−5−4, Minima*<br>*FAA Order JO 7210.3 3−6−2 ATC Surveillance Source Use* | ***REFERENCE−***<br>*FAA Order JO 7110.65, Para 4−1−2, Exceptions*<br>*FAA Order JO 7110.65, Para 4−4−2, Route Structure Transitions*<br>*FAA Order JO 7110.65, Para 5−5−1, Application*<br>*FAA Order JO 7110.65, Para 6−5−4, Minima Along Other Than Established Airways or Routes*<br>*FAA Order JO 7110.65, Chapter 6, Nonradar*<br>*FAA Order JO 7110.65, Para 5−5−4, Minima*<br>*FAA Order JO 7210.3, **Para** 3−6−2, ATC Surveillance Source Use* |

| **OLD** | **NEW** |
|---|---|
| **5−5−4. MINIMA** | **5−5−4. MINIMA** |
| Title through **c4(d)** | No Change |
| **d.** ERAM: | No Change |
| **1.** Below FL 600− *5 miles.* | No Change |
| **2.** At or above FL 600− *10 miles* | **2.** At or above FL 600− *10 miles.* |
| **3.** Up to and including FL 230 where all the following conditions are met − *3 miles*: | No Change |
| **(a)** Significant operational advantages can be obtained. | **(a) Within the 3 NM separation area, and:** |
| Add | **(1) Within 40 NM of the preferred radar; or** |

| | |
|---|---|
| Add | **(2) Within 60 NM of the preferred radar when using ASR−9 with Mode S or ASR−11 MSSR Beacon; or** |
| Add | **(3) When operating in track−based display mode.** |
| **(b)** Within 40 NM of the preferred sensor or within 60 NM of the preferred sensor when using ASR−9 with Mode S or ASR−11 MSSR Beacon and within the 3 NM separation area. | Delete |
| **(c)** The preferred sensor is providing reliable beacon targets. | **(b)** The preferred sensor **and/or ADS−B** is providing reliable targets. |
| **(d)** and **(e)** | Re−letter **(c)** and **(d)** |
| **(f)** Involved aircraft are displayed using the 3 NM target symbol. | **(e)** Involved aircraft are displayed using the 3 NM target symbol. |
| Add | ***NOTE−***<br>***ADS−B allows the expanded use of 3 NM separation in approved areas. It is not required for and does not affect the use of radar for 3 NM separation.*** |

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**1. PARAGRAPH NUMBER AND TITLE:**
Chapter 13, Section 1. ERAM Decision Support Tools (EDST)
13−1−1. DESCRIPTION

**2. BACKGROUND:** The acronym EDST is defined as En Route Decision Support Tool in FAA documents, but the title of Chapter 13, Section 1, and wording in paragraph 13−1−1 can lead to confusion about an alternate use of the acronym. The title of Section 1 and a line of wording in paragraph 13−1−1 are written in a manner that incorrectly implies EDST is also an acronym for ERAM Decision Support Tools.

**3. CHANGE:**

| **OLD** | **NEW** |
|---|---|
| **Section 1. ERAM Decision Support Tools (EDST)** | **Section 1. ERAM – En Route** |

| **OLD** | **NEW** |
|---|---|
| **13−1−1. DESCRIPTION** | **13−1−1. DESCRIPTION** |
| EDST is used by the sector team in performing its strategic planning responsibilities. EDST uses flight plan data, forecast winds, aircraft performance characteristics, and track data to derive expected aircraft trajectories, and to predict conflicts between aircraft and between aircraft and special use or designated airspace. It also provides trial planning and enhanced flight data management capabilities. Under ERAM, the EDST capabilities constitute the initial En Route decision support tools. | **En Route Decision Support Tool (EDST) is an integrated function of ERAM that** is used by the sector team in performing its strategic planning responsibilities. EDST uses flight plan data, forecast winds, aircraft performance characteristics, and track data to derive expected aircraft trajectories, and to predict conflicts between aircraft and between aircraft and special use or designated airspace. It also provides trial planning and enhanced flight data management capabilities. |