U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

Air Traffic Organization Policy

ORDER
JO 7110.10DD

Effective Date:
October 5, 2023

SUBJ: Flight Services

This order prescribes procedures and phraseology for use by personnel providing flight services. Specialists are required to be familiar with the provisions of this order that pertain to their operational responsibilities and to exercise judgment if they encounter situations that are not covered.

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RECORD OF CHANGES

DIRECTIVE NO. JO 7110.10DD

CHANGE TO BASIC	SUPPLEMENTS			OPTIONAL	CHANGE TO BASIC	SUPPLEMENTS			OPTIONAL

FAA Form 1320−5 (6−80) USE PREVIOUS EDITION

Explanation of Major Changes

Direct your questions through the appropriate facility/service center office staff to the office of primary responsibility (OPR), the Flight Service Directorate (AJR-B).

Entire Document
• Content added to follow operational functions from the 2020 ATO Flight Service Concept of Operations. • Content rearranged to adhere to the priority of duties. • Removed “Alaska only” references. • Editorial changes were made where necessary and are not denoted in this matrix because of the insignificant nature of these changes.

Chapter 1. Introduction		
Paragraph	**Old Paragraph (if moved)**	**Change**
1–1–8	1–1–8 and 1–2–6	Updated to reflect the appropriate office of primary responsibility and the process to submit recommendations and added former paragraph 1–2–6, JO 7110.10 Changes, since the subject matter is similar.
1–2–1c		Added definition of “automated services.”
1–2–1e		Added definition of “flight plan area.”
1–2–1l		Expanded the definition of “pertinent” meteorological and aeronautical information to harmonize with FAA JO 7220.4, FAA Certification of Pilot Weather Briefer.
1–2–1p		Added definition of “specialist–provided services.”
1–2–4	11–1–2	Added definitions of the annotations “phraseology,” and “examples.” Added note that phraseology only applies to the identified service.
1–2–5		Added a table of abbreviations/acronyms.
Chapter 2. General Control		
2–1–1		New paragraph describing the purpose of Flight Service.
2–1–2	1–3–2	Revised the definition of “duty priority” and moved detailed definitions of “emergency situations,” “inflight services,” and “preflight services” to paragraphs 3–1–1, 4–1–1, and 5–1–1, respectively.
2–1–3	1–3–3	Deleted sections of transfer of position responsibility redundant with FAA JO 7210.3, Facility Operation and Administration, paragraph 2–2–4 and added a reference to that paragraph.
2–1–4	1–2–7 and 2–1–4	Combined paragraphs 1–2–7 and 2–1–4 since the subject matter is similar.
2–1–4	1–3–1	Revised instructions on when to use automated procedures to harmonize with FAA JO 7110.65. Added provisions for future use of automated procedures.

Chapter 2, Section 2, Interphone Communications	Chapter 10	Moved to improve flow and readability.
Chapter 2, Sections 3, 4, and 5, Phraseology	Chapter 11	Moved to improve flow and readability.
2–3–4i(2)	11–1–13i2	Removed references to Microwave Landing Systems (MLS).
2–4–1	11–1–8	For clarification, added instructions and phraseology for special weather reports and automated special weather reports. Clarified procedures for announcing variable wind and runway visual range values.
2–5–2	11–1–14	Removed phraseology for non–FSS facilities; already contained in FAA JO 7110.65, Air Traffic Control, paragraph 2–4–19.
TBL 2–5–2	TBL 11–1–40	Updated phraseology on TBL 2–5–2 to reflect operational reality and removed reference to MLS.
2–5–7b(5), 2–5–7c	11–1–19b5, 11–1–20	Removed references to MLS.
2–5–8b(1)	11–1–21b1	Removed references to braking action (MU) readings and replaced them with examples of runway condition codes to harmonize with FAA JO 7930.2, Notices to Air Missions.
Chapter 3. Emergency Services		
Chapter 3	Chapter 4	Moved up to align with the priority of duties. Reorganized content and procedures to harmonize with FAA JO 7110.65, Air Traffic Control.
3–1–1	4–1–1	Revised to agree with FAA JO 7110.65, Air Traffic Control, determination of an emergency. Included sudden loss of radio communications with aircraft operating under visual flight rules (VFR) as an aircraft emergency.
3–1–1d(1)	4–1–1d1	Added that an emergency may be declared by an avionics system, such as an emergency autoland system to harmonize with the Pilot/Controller Glossary.
3–1–2	4–1–3	Revised information to be obtained in an emergency to agree with FAA JO 7110.65, Air Traffic Control.
3–1–3	4–1–5	Revised assisting in an emergency to agree with FAA JO 7110.65, Air Traffic Control.
3–2–3	4–2–4	Since “radar” services are now more of a surveillance-type service, where aircraft position is now more reliant on the onboard avionics package, changed “radar” to “surveillance coverage.”
Chapter 3, Section 4, Overdue Aircraft	Chapter 7	Moved search and rescue (SAR) to emergency services. Added Enhanced Special Reporting System (eSRS) and the Surveillance Enhanced SAR (SE SAR) service to communications search criteria.
3–5–1, 3–5–2, 3–5–3	Chapter 6, Section 3	Moved the alerting service to emergency services, under international SAR.
3–5–4	7-5-1	Moved Canadian Transborder Flights to emergency services, under international SAR.
3–5–5	6–5–2b	Moved Mexican Transborder Flights to emergency services, under international SAR.

Chapter 4. In-Flight Services		
Chapter 4	Chapter 3	Moved to align with the priority of duties. Updated sections on pre–duty requirements and operational priority to reflect current procedures.
4–2–3d	3–3–3d	Added the use of the word “super” as part of the identification in all communications with or about super aircraft to harmonize with JO 7110.65, Air Traffic Control, subparagraph 2–4–14b.
4–2–13	3–3–13	Changed references to “penetration” of Class A airspace or prohibited/restricted areas to “unauthorized entry.”
4–2–14	Chapter 5, Section 7	Moved non–emergency parachute jumping from flight data to inflight services where it is more appropriate.
4–3–1d		Added Remote Weather Advisory Service (RWAS) to advisory services.
Chapter 4, Section 5, Airport Lighting	Chapter 9	Moved airport lighting under inflight services where it is more appropriate. Removed airport lighting instructions already included in FAA JO 7110.65, Air Traffic Control, and added references to that order.
Chapter 5. Pre-Flight Services		
Chapter 5	Chapter 2	Moved the entire chapter to align with the priority of duties.
5–2–1	2–1–1	Revised the definition of “pilot briefing” to harmonize with that in AC 91–92, Pilot’s Guide to a Preflight Briefing.
5–2–2		Added information on pilot weather briefer certifications.
5–2–4	2–1–7	Added notes for automated services and unmanned systems. If a UAS operator calls today, a briefer provides whatever information is available, similar to briefings for hot air balloons, gliders, and other low–level operations. But the note serves a few purposes: (1) as a placeholder for potential future services; (2) to alert users that until standards for UAS briefings are in place (that is, a UAS–specific briefing), briefings must be performed in accordance with the applicable regulation for that particular operation (for example, Part 61, Part 135, Part 107); (3) if a third party (for example, another weather vendor or a USS) enters in an agreement with the Federal Contract Flight Service Station service provider to use their information for UAS briefings, the briefings must comply with the applicable regulation.
5–2–5	2–2–1	Changed title from “Conduct of Standard Briefing” to “Delivery of Standard Briefings.” Added a concise definition of a standard briefing.
5–2–5a		Added note on the use of automated systems in pilot briefings.
5–2–5b	2–2–1b	Added a note that automated systems may provide the pilot the preference to opt out of the international cautionary advisory.
5–2–5c(1)	2–2–1c1	Added density altitude to the explicit examples for adverse conditions because it meets the following criteria: “Include this element when meteorological or aeronautical conditions are reported or forecast that might influence the pilot to alter the proposed flight.”
5–2–5c(2)	2–2–1c	Clarified instructions on the application of VFR Flight Not Recommended (VNR). Added examples of VNR phraseology. Provided additional options for VNR phraseology (“VFR not recommend” or “VFR flight not recommended”).

5–2–5c(3)		Added “check density altitude” as a mandatory briefing item in a standard briefing. Added instructions and phraseology (copied from advisory services, subparagraph 4–3–3b(10)).
5–2–5c(4)	2–2–1c3	Revised for clarity. Added a subparagraph that automated systems may deliver the synopsis information using graphics.
5–2–5c(5)	2–2–1c4	Revised for clarity. Added a statement that automated systems may deliver current conditions using a variety of methods (for example, graphics, text, and dynamic displays).
5–2–5c(6)	2–2–1c5, c6, c7	Reorganized to improve flow and readability. Combined the en route, destination, and winds aloft forecast elements into one subparagraph.
5–2–5c(7)	2–2–1c8	Revised the Notice to Air Missions (NOTAM) element for clarity.
5–2–5c(8)	2–2–1c9	Added a note that automated systems may provide the pilot the preference to opt out of the prohibited areas statements.
5–2–5c(10)	2–2–1c11	Changed “request for PIREPs” to “Solicitation of PIREPs” to harmonize with the ATO’s Top 5 phrasing. Added instructions for the solicitation of pilot weather reports (PIREPs) and added examples.
5–2–5c(11)	2–2–1c12	Reorganized the “Upon Request” element for readability.
5–2–6	2–2–2	Changed title from “Conduct of Abbreviated Briefing” to “Delivery of Abbreviated Briefings.” Added definition of an abbreviated briefing. Reorganized to improve flow and readability. Added note for automated systems.
5–2–7	2–2–3	Changed title from “Conduct of Outlook Briefing” to “Delivery of Outlook Briefings.” Added definition of an outlook briefing. Reorganized to improve flow and readability. Added note for automated systems.
Chapter 5, Section 3, Briefing Display	2–1–3	Moved to the end of the section to improve flow and readability and added weather and aeronautical information details to make it more comprehensive.
Chapter 6. Flight Data		
Chapter 6	Chapter 5, Chapter 12	Moved to align with the priority of duties. Added definition of flight data services. Parts of Chapter 5, Communications Services, and all of Chapter 12, Data Communication Systems, were consolidated into Chapter 6 for flow and readability.
6–1–4	5–1–8	Clarified procedures for handling telephone requests for ATC clearances.
6–1–11	12–1–6	Added an explanation of Q signals.
6–4–12	6–1–12	Updated Air Mobile Service (AMS) to Aeronautical Mobile Communications Service (AMCS). Removed excessive verbiage in this paragraph that did not add value to the order.
Chapter 7. NOTAM Services		
Chapter 7		A new chapter was created based on operational functions and the priority of duties. Also allows for the expansion of NOTAM duties in Alaska.
Chapter 8. FAA Weather Services		
8–1–2d	8–2–3	Clarified instructions on the solicitation of PIREPs.
8–1–5b(3)	8–2–13	Added LAT/LON as an acceptable location for a PIREP in the /OV field to align with the Federal Meteorological Handbook No. 12

		https://www.icams-portal.gov/resources/ofcm/fmh/FMH12/fmh12.pdf.
8–1–5l(1)	8–2–13l	Provided clarification for reporting of low-level wind shear.
8–1–5l(8)	8–1–5l(7)	Moved volcanic activity before plain language to prioritize remark.
8–1–6	8–2–6	Revised definitions of turbulence intensities to agree with the Aeronautical Information Manual (AIM) and other air traffic directives.
8–1–7	8–2–7	Updated title from "Reporting Icing Conditions in PIREPs" to "Reporting Airframe Icing in PIREPs" to appropriately describe its purpose. Revised definitions of airframe icing intensities to agree with the AIM and other air traffic directives.
8–1–8		Added wind shear descriptions and clarification on how to report wind shear.
Chapter 8, Section 2, Surface Weather Observations		Added a section on FAA's Surface Weather Observer Program.
Chapter 8, Section 3, Aviation Weather Cameras		Added a section on FAA's Aviation Weather Camera Program.
Chapter 8, Section 4, Future FAA Weather Services		Added a section on potential weather services that may be employed by FAA in the future.
	Chapter 8, Section 3	Deleted. The wind and temperature aloft forecast are described in the AIM and other FAA and National Weather Service (NWS) documentation.
	Chapter 8, Section 4	Deleted. The terminal aerodrome forecast is described in the AIM and other FAA and NWS documentation.
	Chapter 8, Section 5	Deleted. The aviation surface forecast, the aviation cloud forecast, and the area forecast are described in the AIM and other FAA and NWS documentation.
	Chapter 8, Section 6	Deleted. The severe weather forecasts are described in the AIM and other FAA and NWS documentation.
	Chapter 8, Section 7	Deleted. Flight advisories such as AIRMETs, SIGMETs, and Convective SIGMETs are described in the AIM and other FAA and NWS documentation.
	Chapter 8, Section 8	Deleted. Center weather advisories are described in the AIM and other FAA and NWS documentation.
Appendices		
Appendix A, Appendix A. FAA Form 7233−4, International Flight Plan	TBL A–4 and TBL A–10	Changed Item 18 SUR/ from 260B and 282B to A2. This change modifies codes used in field 18 of the International Civil Aviation Organization (ICAO) flight plan for indication of Automatic Dependent Surveillance-Broadcast (ADS-B) equipage in compliance with international agreements.
Appendix B, FAA Form 7233–1, Flight Plan		Changed from "block" to "item" for consistency with terminology used regarding FAA Form 7233–4, International Flight Plan and to match instructions originally provided in paragraph 5–2–1.

Appendix B, FAA Form 7233–1, Flight Plan	5–2–1	Moved instructions for the completion of FAA Form 7233–1, Flight Plan, from Chapter 5, Section 2.
Appendix B, FAA Form 7233–1, Flight Plan, Section 1, subparagraph 3.a.	Appendix B, FAA Form 7233–1 – Flight Plan, a.	Updated the requirement to clarify that all flight plans, except for the Department of Defense, must use the international flight plan format. This means that either the vendor has to sign and comply or use someone else's NADIN access that has a memorandum of agreement or is contracted by the FAA. No one can have access without a memorandum of agreement or a contract. Prior verbiage only specified flight plans "filed through an FSS or FAA contracted flight plan filing service," which leaves it open to third-party vendors.
Appendix B, FAA Form 7233–1, Flight Plan		Editorial changes throughout for readability.
Appendix C, FAA Forms		No changes.
Appendix D, Service B Message Formats		No changes.
Appendix E, Domestic Flight Data (Legacy)		Deleted. Was included in previous editions of the order only as a transition to new ICAO flight plan filing procedures.
Appendix F, International Operations (Legacy)		Deleted. Was included in previous editions of the order only as a transition to new ICAO flight plan filing procedures.

CHANGE

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

JO 7110.10DD
CHG 1

Effective Date:
March 21, 2024

SUBJ: Flight Services

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1. Purpose of This Change. This change transmits revised pages to Federal Aviation Administration Order JO 7110.10DD, Flight Services.

2. Audience. This order applies to all Federal Aviation Administration (FAA) Air Traffic Organization (ATO) personnel and anyone using ATO directives.

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

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

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

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

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Flight Services
Explanation of Changes
Change 1

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

a. Editorial Changes

As a result of the Chart Supplement Modernization Initiative, the Chart Supplement U.S. definition was revised, and this is reflected in mentions of Chart Supplement in paragraph 6−2−1. Other editorial changes include correcting the spelling of "Juliet" to "Juliett" in paragraph 2−3−3, TBL 2−3−2; removing the term "degrees of the compass" and adding the appropriate phrase "referenced true north" in subparagraph 5−2−5c6(b), as well as adding "in degrees Fahrenheit" to specify the units of measure for temperature; and correcting a word use error in subparagraph 4−2−14a and 5−2−4 Note 2.

b. 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 procedures and phraseology for use by personnel providing flight services. Specialists are required to be familiar with the provisions of this order that pertain to their operational responsibilities and to exercise judgment if they encounter situations that are not covered.

1−1−2. AUDIENCE

This order applies to all Federal Aviation Administration (FAA) Air Traffic Organization (ATO) personnel and anyone using ATO directives.

1−1−3. WHERE TO FIND THIS ORDER

This order is available on the FAA's Air Traffic Plans and Publications website at http://faa.gov/air_traffic/publications and Orders & Notices website at https://www.faa.gov/regulations_policies/orders_notices/.

1−1−4. WHAT THIS ORDER CANCELS

FAA Order JO 7110.10CC, Flight Services, dated April 20, 2023, 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. If further information is desired, direct questions through the appropriate facility/service area office staff to the Flight Services Directorate.

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

a. Publication of this order and its changes coincide with aeronautical information regulation and control dates, according to TBL 1−1−1.

b. The cutoff date for completion in TBL 1−1−1 refers to the deadline for a proposed change to be fully coordinated, including signatures. 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 submission.

TBL 1−1−1
Publication Schedule

Basic or Change	Cutoff Date for Completion	Effective Date of Publication
JO 7110.10DD	4/20/23	10/5/23
Change 1	10/5/23	3/21/24
Change 2	3/21/24	9/5/24
JO 7110.10EE	9/5/24	2/20/25
Change 1	2/20/25	8/7/25
Change 2	8/7/25	1/22/26
Change 3	1/22/26	7/9/26
JO 7110.10FF	7/9/26	12/24/26

1−1−7. DELIVERY DATES

This order will be available on the FAA's website 30 days prior to its effective date.

1−1−8. RECOMMENDATIONS FOR PROCEDURAL CHANGES

The office of primary responsibility (OPR) for this order is the Flight Service Directorate (AJR−B). All procedural changes must be coordinated with the OPR prior to submission to the Mission Support Policy Directorate (AJV−P) as follows:

a. Field 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−AJR−FSSOG@faa.gov. The submission should include a description of the recommended change and the proposed language.

d. Upon approval of the submitted changes to the OPR, the OPR will forward the document change proposal to the Mission Support Policy Directorate (AJV−P) for processing.

NOTE−
For details on the submission process as well as additional processing responsibilities, please refer to FAA Order JO 7000.5, Procedures for Submitting Changes to Air Traffic Control Publications.

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

f. Each reprinted, revised, or additional page will show the change number and the effective date of the change. Bold lines in the margin of the text will mark the location of all changes except editorial corrections.

1−1−9. DISTRIBUTION

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

Section 2. Terms of Reference

1−2−1. WORD MEANINGS

As used in this order:

a. “**Aircraft**” means the airframe, crewmembers, or both.

b. “**Altitude**” means indicated altitude mean sea level (MSL), flight level (FL), or both.

c. “**Automated services**” means those services delivered via an automated system (that is, without human interaction) (for example, flight plans, Notices to Air Missions [NOTAM], interactive maps, computer−generated text−to−speech messages, short message service, or email).

d. “**Feet**” means MSL unless otherwise stated.

e. “**Flight plan area (FPA)**” is the geographical area assigned to a flight service station (FSS) to establish primary responsibility for services that may include search and rescue (SAR) for visual flight rules (VFR) aircraft, issuance of NOTAMs, pilot briefings, in−flight services, broadcast services, emergency services, flight data processing, international operations, and aviation weather services. Consolidated FSS facilities may combine FPAs into larger areas of responsibility (AOR).

f. “**Form**” means a paper record or an electronic equivalent that must be retained in accordance with FAA directives.

g. “**History files**” means one or more digital or paper data repositories that must be retained in accordance with FAA directives.

h. “**May**” or “**need not**” means a procedure is optional.

i. “**Miles**” means nautical miles (NM) unless otherwise specified and means statute miles in conjunction with visibility.

j. “**Must**” means a procedure is mandatory.

k. “**Must not**” means a procedure is prohibited.

l. “**Pertinent**” means relating directly and significantly to the matter at hand.

1. The horizontal limit of pertinent meteorological and aeronautical information is considered to be 25 miles on either side of the proposed route. However, when determining the pertinence of information, specialists and automated systems should take into account the dynamic aspect of weather, aircraft performance, and type of flight. Conditions occurring or expected to occur more than 25 miles from the route must be provided if there is a potential for the safety of the flight to be compromised.

2. The vertical limits of pertinent meteorological and aeronautical information are considered to be:

(a) The climb out and approach paths.

(b) For flights below FL 180: from the surface to 5,000 feet above the proposed en route altitude.

(c) For flights at or above FL 180: from 5,000 feet above and below the proposed en route altitude.

m. “**Sector**,” when used in conjunction with FSS functions, means a specifically described geographic area assigned a National Airspace Data Interchange Network (NADIN) address.

n. “**Shared database**” is a database within an FSS operational system that is accessible by specialists in other geographical locations.

o. “**Should**” means a procedure is recommended.

p. “**Specialist−provided services**” means those services delivered directly by a flight service specialist via ground/ground communication, air/ground communication, in person, or technology (for example, speech−to−text, email, or short message service).

q. "**Tie−in facility**," as indicated in FAA Order JO 7350.9, Location Identifiers, for the purposes of this order, designates the responsible facility/sector for sending/receiving flight plans, flight notification messages, and performing SAR duties for the listed location.

r. "**Time**," when used for air traffic control operational activities, is the hour and the minute(s) in Coordinated Universal Time (UTC). Change to the next minute is made at the minute plus 30 seconds, except time checks are given to the nearest quarter minute. Specialists must state the word "local" or the time zone equivalent when local time is given during radio and telephone communications; the term "Zulu" may be used to denote UTC.

s. "**Transmit**" means to send data via NADIN or Weather Message Switching Center Replacement (WMSCR) to an outside recipient or to process data internally within an operational system that shares a global database.

t. "**Will**" means futurity, not a requirement for application of a procedure.

u. Plural words include the singular.

v. Singular words include the plural.

1−2−2. NOTES

Statements of fact or of an explanatory nature and relating to the use of directive material are identified as ***NOTE***.

1−2−3. REFERENCES

As used in this order, references direct attention to an additional or supporting source of information such as FAA, National Weather Service (NWS), and other agencies' orders, directives, notices, Title 14, Aeronautics and Space, of the Code of Federal Regulations (14 CFR), and advisory circulars (AC).

1−2−4. ANNOTATIONS

a. The annotation ***PHRASEOLOGY*** denotes the prescribed words or phrases to be used in communications. Phraseology, as depicted in this order, is mandatory unless an exception is explicitly identified.

NOTE−
1. *Specialists may rephrase the message, after first using the prescribed phraseology for a specific procedure, to ensure the content is understood. Specialists must exercise good judgment when using nonstandard phraseology to aid in comprehension.*

2. *Phraseology applies to the identified service (for example, in−flight or broadcast). The use of phraseology in other services is encouraged for consistency and may be required by locally approved procedures.*

b. 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 specifically prescribed phraseology, the example merely denotes suggested words and/or phrases that may be used in communications.

NOTE−
Using the exact text in an example not preceded by specifically prescribed phraseology is not mandatory. However, to the extent possible, the words and/or phrases are expected to approximate those used in the examples.

1−2−5. ABBREVIATIONS

As used in this order, the following abbreviations have the meanings indicated in TBL 1−2−1.

NOTE−
Additional abbreviations and their meanings are included in other tables or paragraphs within the order.

TBL 1−2−1

FAA Order JO 7110.10 Abbreviations

Abbreviation	Meaning
AB	Abbreviated Briefing
AC	Advisory Circular
ACARS	Aircraft Communication Addressing and Reporting System
ACC	Area Control Center
ACFT	Aircraft
ACID	Aircraft Identification
ACK	Acknowledgment
ADCUS	Advise Customs
ADF	Automatic Direction Finder
ADIZ	Air Defense Identification Zone
ADS	Automatic Dependent Surveillance
ADS−B	Automatic Dependent Surveillance−Broadcast
ADS−R	Automatic Dependent Surveillance−Rebroadcast
AFD	Aviation Forecast Discussion
AFIS	Automatic Flight Information Service
AFTN	Aeronautical Fixed Telecommunications Network
AGL	Above Ground Level
AIM	Aeronautical Information Manual
AIP	Aeronautical Information Publication
AIREP	Aircraft Report
AIRMET	Airmen's Meteorological Information
AIS	Aeronautical Information System
AISR	Aeronautical Information Service Replacement
ALERFA	Alert Phase (Alerting Service)
ALNOT	Alert Notice
AMCS	Aeronautical Mobile Communication Service
AMIS	Aircraft Movement Information Services
AMOC	Air and Marine Operations Center
ANSP	Air Navigation Service Provider
AOR	Area of Responsibility
APCH	Approach
APIS	Advance Passenger Information System
APV	Approach Procedures with Vertical Guidance
AR	Authorization Required
ARS	Aircraft Report Special
ARTCC	Air Route Traffic Control Center
ATC	Air Traffic Control
ATCAA	Air Traffic Control Assigned Airspace

Abbreviation	Meaning
ATCSCC	Air Traffic Control System Command Center
ATCT	Air Traffic Control Tower
ATN	Aeronautical Telecommunication Network
ATO	Air Traffic Organization
ATS	Air Traffic Service
ATSC	Air Traffic Security Coordinator
BASOPS	Base Operations Office
CANPASS	Canadian Passenger Accelerated Service System
CBP	Customs and Border Protection
CFR	Code of Federal Regulations
CIP	Current Icing Product
COA	Certificate of Authorization
CONUS	Contiguous United States
CoSPA	Consolidated Storm Prediction for Aviation
CPDLC	Controller Pilot Datalink Communications
CTAF	Common Traffic Advisory Frequency
CWA	Center Weather Advisory
CWSU	Center Weather Service Unit
DA	Direct Access
DCL	Departure Clearance
DEN	Domestic Events Network
DETRESFA	Distress Phase (Alerting Service)
DH	Decision Height
DME	Distance Measuring Equipment
DoD	Department of Defense
DOT	Department of Transportation
DSN	Defense Switching Network
DVFR	Defense Visual Flight Rules
EAS	En Route Automation System
ECM	Electronic Counter Measure
EFS	Electronic Flight Strip
ELT	Emergency Locator Transmitter
ES	Extended Squitter
ESCAT	Emergency Security Control of Air Traffic
eSRS	Enhanced Special Reporting System
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
ETE	Estimated Time En Route
FAA	Federal Aviation Administration
FBO	Fixed−Based Operator

Abbreviation	Meaning
FDP	Flight Data Processing
FICON	Field Condition
FIP	Forecast Icing Product
FIR	Flight Information Region
FIRIV	Arrival Report Will Be Filed With
FIS−B	Flight Information Service−Broadcast
FL	Flight Level
FLT ADVY	Flight Advisory
FPA	Flight Plan Area
FPL	Flight Plan
FPNO	Flight Plan Not Received
FRC	Full Route Clearance
FRD	Fix¿Radial ¿Distance
FSS	Flight Service Station
FV	Flight Visibility
G−AIRMET	Graphical AIRMET
GBAS	Ground−Based Augmentation System
GENOT	General Notice
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GTG	Graphical Turbulence Guidance
HF	High Frequency
HLA	High Level Airspace
IA	Indirect Access
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
INCERFA	Uncertainty Phase (Alerting Service)
INREQ	Information Request
IR	IFR Military Training Route
ISA	International Standard Atmosphere
JATOC	Joint Air Traffic Operations Command
L/MF	Low/Medium Frequency
LAA	Local Airport Advisory
LAM	Logical Acknowledgement Message
LLWS	Low−Level Wind Shear
LOA	Letter of Agreement
MANPADS	Man−Portable Air Defense Systems
MARSA	Military Authority Assumes Responsibility for Separation of Aircraft

Abbreviation	Meaning
MB	Magnetic Bearing
MDA	Minimum Descent Altitude
MEDEVAC	Medical Emergency Evacuation
METAR	Aviation Routine Weather Report
MH	Magnetic Heading
MNPS	Minimum Navigation Performance Specification
MOA	Military Operations Areas
MOT	Ministry of Transport (Canada)
MSL	Mean Sea Level
MTR	Military Training Route
NADIN	National Airspace Data Interchange Network
NAR	North American Routes
NAS	National Airspace System
NAVAID	Navigational Aid
NDB	Non−directional Radio Beacon
NEMC	National Enterprise Management Center
NEXRAD	Next Generation Radar (NWS)
NM	Nautical Miles
NOPAR	Do Not Pass to Air Defense Radar
NORAD	North American Aerospace Defense Command
NORIV	No Arrival Report
NOTAM	Notice to Air Missions
NRS	Navigation Reference System
NWS	National Weather Service
OCC	Operations Control Center
OTLK	Outlook Briefing
PBN	Performance−Based Navigation
PDC	Pre−Departure Clearance
PIREP	Pilot Weather Report
RAA	Remote Airport Advisory
RAIS	Remote Airport Information Service
RB	Relative Bearing
RCC	Rescue Coordination Center
RCP	Required Communication Performance
RCR	Runway Condition Reading
RENOT	Regional Office Notice
RF	Radius to Fix
RNAV	Area Navigation
RNP	Required Navigation Performance
ROC	Regional Operations Center

Abbreviation	Meaning
RSP	Required Surveillance Performance
RTF	Radio Telephone
RVR	Runway Visual Range
RwyCC	Runway Condition Code
SAA	Special Activity Airspace
SAM	Special Air Mission
SAR	Search and Rescue
SATVOICE	Satellite Voice Communications
SBAS	Space−Based Augmentation System
SE SAR	Surveillance Enhanced Search and Rescue
SFRA	Special Flight Rules Area
SID	Standard Instrument Departure
SIGMET	Significant Meteorological Information
SM	Statute Miles
SOC	Service Operations Center
SPECI	Aviation Selected Special Weather Report
STAR	Standard Terminal Arrival
STR	Strategic Training Range
SUA	Special Use Airspace
SVFR	Special Visual Flight Rules
TAC	Traditional Alphanumeric Coding
TACAN	Tactical Air Navigational Aid
TAF	Terminal Aerodrome Forecast
TEI	Text Element Indicator
TELCO	Telephone Company
TIS−B	Traffic Information Services – Broadcast
TFR	Temporary Flight Restriction
TSA	Transportation Security Administration
TSOC	Transportation Security Operation Center
UA	Routine Pilot Report
UAS	Unmanned Aircraft System
UAT	Universal Access Transceiver
UAV	Unmanned Aerial Vehicles
USNOF	U.S. NOTAM Office
UTC	Coordinated Universal Time
UUA	Urgent Pilot Report
VDL	Very High Frequency Data Link
VFR	Visual Flight Rules
VHF	Very High Frequency
VIP	Very Important Person

Abbreviation	Meaning
VNR	VFR Flight Not Recommended
VOR	VHF Omni−directional Radio Range
VORTAC	VHF Omni−directional Radio Range and Tactical Air Navigational Aid
VR	VFR Military Training Route
WAAS	Wide Area Augmentation System
WMO	World Meteorological Organization
WMSCR	Weather Message Switching Center Replacement
WOC	Washington Operations Center

Chapter 2. General Control

Section 1. General

2−1−1. FLIGHT SERVICE

The primary purpose of Flight Service is to support the NAS by providing certain essential services to supplement the ATC system. This is accomplished by providing users of the NAS with:

a. Emergency assistance.

b. SAR services for aircraft operating under VFR.

c. Relay of IFR ATC clearances.

d. Voice communications for designated portions of air route traffic control center (ARTCC) airspace.

e. Flight progress reports.

f. Advisory services and SVFR operations.

g. Aviation weather support and enhancement for air traffic services.

h. Weather report input, including (but not limited to) surface observations, augmentation, and PIREPs.

i. NOTAM entry, dissemination, and coordination.

j. Flight plan processing.

k. Pilot briefing of meteorological and aeronautical information before and during flight.

2−1−2. DUTY PRIORITY

Because there are many variables involved, it is impossible to develop a standard list of duty priorities that would apply uniformly to every situation. Personnel must evaluate each set of circumstances on its own merit. When more than one action is required, personnel must exercise their best judgment based on the known facts and circumstances. The action which appears most critical from a safety standpoint should be performed first.

The following order of duty priorities is offered as a guideline.

a. Emergency situations. Emergency situations are those where life or property is in immediate danger.

NOTE−
Refer to paragraph 3−1−1 for information on determining an emergency.

b. In-flight services. In-flight services are those provided to or affecting, aircraft in−flight, or otherwise operating on the airport surface.

NOTE−
Refer to paragraph 4−1−1 for a comprehensive description of in-flight services.

c. Pre-flight services. Pre-flight services are those directly affecting aircraft operations and are provided prior to actual departure.

NOTE−
Refer to paragraph 5−1−1 for a comprehensive description of pre-flight services.

2−1−3. TRANSFER OF POSITION RESPONSIBILITY

Specialists must accomplish the transfer of position responsibility in accordance with appropriate facility directives each time the responsibility for a position required to maintain operational continuity is transferred from one specialist to another. The relieving specialist and the specialist being relieved share equal responsibility for the completeness and accuracy of the position relief briefing.

Facilities must develop their procedures and directives in accordance with FAA Order JO 7210.3, Facility Operation and Administration, paragraph 2–2–4, Duty Familiarization and the Transfer of Position Responsibility, and paragraph 2–2–6, Sign In/Out and On/Off Procedures.

2−1−4. PROCEDURAL APPLICATIONS

a. Different operational systems are used to provide flight services within the U.S. Each operational system must have individual instructions in the form of a user's manual or guide, either electronically or in paper form, that provide the necessary steps to accomplish the requirements set forth in this order.

b. Where databases are shared, local procedures may be used to facilitate the handling of flight data across the flight plan area boundaries.

c. Apply the procedures in this order, except when other procedures are contained in an LOA or other appropriate FAA documents, provided they only supplement this order and any standards they specify are not less than those in this order.

NOTE−
1. *Pilots are required to abide by applicable provisions of 14 CFR or any other pertinent regulations regardless of the application of any procedure in this order.*

2. *FAA Order JO 7210.3, Facility Operation and Administration, contains administrative instructions pertaining to these letters and documents.*

d. Use automated procedures in preference to non−automated procedures when workload, communications, and equipment capabilities permit.

e. Service providers must evaluate new automated procedures and/or capabilities independently for safety and policy compliance. Application of new automated procedures and/or capabilities will depend on Flight Service Directorate approval.

NOTE−
Technology's fast evolution makes it impossible to develop a standard list of approved automated procedures that apply uniformly to every situation and system.

Section 2. Interphone Communications

2−2−1. GENERAL

The following procedures and phraseologies apply to inter−facility and intra−facility telephone communications conducted from any position of operation.

a. Interphone use is restricted to authorized official business only.

b. Monitor interphones continuously. At facilities without ringers, keep speaker volume at a level sufficient to hear all transmissions. In the event of interphone failure, use authorized backup procedures (for example, commercial telephone, aircraft radio relay).

c. Use the words or phrases in interphone communications as contained in the Pilot/Controller Glossary.

2−2−2. TRANSMISSION PRIORITIES

Give priority to interphone transmissions as follows:

a. First priority. Emergency messages including essential information on aircraft accidents or suspected accidents. After actual emergency has passed, give a lower priority to messages relating to an accident.

b. Second priority. Clearance and control instructions.

c. Third priority. Movement and control messages using the following order of precedence when possible:

1. Progress reports.

2. Departure or arrival reports.

3. Flight plans.

d. Fourth priority. Movement messages on VFR aircraft.

e. Fifth priority. NOTAM coordination.

f. Sixth priority. Administrative messages (for example, outages).

2−2−3. PRIORITY INTERRUPTION

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

2−2−4. MESSAGE INITIATION

Initiate interphone messages as follows:

a. Assure line is not in use.

PHRASEOLOGY−
LINE CLEAR?

b. If line is not in use, establish contact with the desired facility and/or position.

EXAMPLE−
Manual signaling (ring line):
FSS − (calls ARTCC via DA/IA line)
ARTCC − "Anchorage Center." or "Sector D5."
FSS − "Kenai Radio. Kenai progress Apache one two three."
ARTCC − "Go ahead."

FSS – "Over Kenai…etc." "L−H."
ARTCC – "C−M."

Voice signaling (shout line):
FSS – "Fort Worth Center, Fort Worth Radio, clearance request."
ARTCC "Fort Worth Center, Go Ahead."
FSS – "Request clearance, Army ......etc."

c. State the name of the FSS and position, if appropriate. At the in−flight position, state the name of the FSS followed by the word "RADIO."

EXAMPLE−
"Fort Worth Flight Data."
"Fairbanks Radio."
"Leesburg Radio."

d. When calling or replying on an interphone line that only connects two facilities, you may omit the facility's name.

EXAMPLE−
"Radio, inbound estimate."

2−2−5. MESSAGE TERMINATION

Terminate interphone messages with your operating initials.

EXAMPLE−
"V−N."

Section 3. General Phraseology

2–3–1. PURPOSE

This section prescribes standardized procedures and phraseology for specialist to use when communicating weather and aeronautical information in broadcast, radiotelephone, and interphone communications. Where position or procedure–specific phraseology is required, there are references to the relevant chapter of this order.

2–3–2. WORDS AND PHRASES

Use the words or phrases in broadcast, radiotelephone, and interphone communications as contained in the Pilot/Controller Glossary.

2–3–3. ICAO PHONETICS

Use the ICAO pronunciation of numbers and, as necessary, individual letters for clarity. The ICAO radiotelephony alphabet and pronunciation guides are contained in TBL 2–3–1 and TBL 2–3–2.

NOTE–
Emphasize pronunciation of syllables in boldface.

TBL 2–3–1
ICAO Phonetics – Numbers

Character	Word	Pronunciation
0	Zero	ZE–RO
1	One	WUN
2	Two	TOO
3	Three	TREE
4	Four	**FOW**–ER
5	Five	FIFE
6	Six	SIX
7	Seven	**SEV**–EN
8	Eight	AIT
9	Nine	**NIN**–ER

TBL 2−3−2
ICAO Phonetics − Individual Letters

Character	Word	Pronunciation
A	Alfa	**AL**FAH
B	Bravo	**BRAH**VOH
C	Charlie	**CHAR**LEE
D	Delta	**DELL**TAH
E	Echo	**ECK**OH
F	Foxtrot	**FOKS**TROT
G	Golf	GOLF
H	Hotel	HOH**TELL**
I	India	**IN**DEE AH
J	Juliett	**JEW**LEE ETT
K	Kilo	**KEY**LOH
L	Lima	**LEE**MAH
M	Mike	MIKE
N	November	NO**VEM**BER
O	Oscar	**OSS**CAH
P	Papa	PAH**PAH**
Q	Quebec	KEH**BECK**
R	Romeo	**ROW**ME OH
S	Sierra	SEE**AIR**AH
T	Tango	**TANG**GO
U	Uniform	**YOU**NEE FORM
V	Victor	**VIK**TAH
W	Whiskey	**WISS**KEY
X	X−Ray	**ECKS**RAY
Y	Yankee	**YANG**KEY
Z	Zulu	**ZOO**LOO

2−3−4. NUMBER USAGE

State numbers as follows:

a. Serial numbers. Separate digits.

EXAMPLE−

Number	Phraseology
11,495	ONE ONE FOUR NINER FIVE
20,069	TWO ZERO ZERO SIX NINER

b. Altitudes or flight levels.

1. Altitudes. Pronounce each digit in the number of hundreds or thousands followed by the word "HUNDRED" or "THOUSAND," as appropriate.

EXAMPLE−

Altitude	Phraseology
5,000	FIVE THOUSAND
10,000	ONE ZERO THOUSAND
11,500	ONE ONE THOUSAND FIVE HUNDRED

2. Altitudes may be restated in group form for added clarity if the specialist chooses.

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

EXAMPLE−

Altitude	Phraseology
10,000	TEN THOUSAND
11,500	ELEVEN THOUSAND FIVE HUNDRED

3. Flight levels. The words "FLIGHT LEVEL," followed by the separate digits of the flight level.

EXAMPLE−

Flight Level	Phraseology
180	FLIGHT LEVEL ONE EIGHT ZERO
270	FLIGHT LEVEL TWO SEVEN ZERO

4. Minimum descent altitude/decision height/decision altitude (MDA/DH/DA). The words "MINIMUM DESCENT ALTITUDE," "DECISION HEIGHT," or "DECISION ALTITUDE" followed by separate digits of the MDA/DH/DA altitude.

EXAMPLE−

Altitude	Phraseology
1,320	MINIMUM DESCENT ALTITUDE ONE THREE TWO ZERO
486	DECISION HEIGHT FOUR EIGHT SIX
744	DECISION ALTITUDE SEVEN FOUR FOUR

c. Time.

1. General time information. The four separate digits of the hour and minutes in terms of UTC.

EXAMPLE−

Time	Phraseology
0115 (UTC)	ZERO ONE ONE FIVE
1315 (UTC)	ONE THREE ONE FIVE

2. Upon request. The four separate digits of the hours and minutes in terms of UTC followed by the local time equivalent; or the local time equivalent only. Local time may be based on the 24−hour clock system. The term "Zulu" may be used to denote UTC.

EXAMPLE–

Time	Phraseology
2:30 P.M.	TWO THIRTY P–M LOCAL
2230 (UTC), 2:30 P.M.	TWO TWO THREE ZERO ZULU, TWO THIRTY P–M LOCAL
2230 (UTC), 1430 PST	TWO TWO THREE ZERO, ONE FOUR THREE ZERO PACIFIC

3. Time check. The word "TIME" followed by the four separate digits of the hour and minutes, and nearest quarter minute. Fractions of a quarter minute less than eight seconds are stated as the preceding quarter minute; fractions of a quarter minute of eight seconds or more are stated as the succeeding quarter minute.

EXAMPLE–

Time	Phraseology
1415:06	TIME, ONE FOUR ONE FIVE
1415:10	TIME, ONE FOUR ONE FIVE AND ONE–QUARTER

4. Abbreviated time. The separate digits of the minutes only.

EXAMPLE–

Time	Phraseology
1415	ONE FIVE
1420	TWO ZERO

NOTE–
Change to the next minute is made at the minute plus 30 seconds.

d. Field elevation. The words "FIELD ELEVATION," followed by the separate digits of the elevation.

EXAMPLE–

Elevation	Phraseology
17 feet	FIELD ELEVATION ONE SEVEN
187 feet	FIELD ELEVATION ONE EIGHT SEVEN
2,817 feet	FIELD ELEVATION TWO EIGHT ONE SEVEN

e. Zero. The number "0" is stated as "ZERO," except where it is used in approved group form for authorized aircraft call signs and in stating altitudes.

EXAMPLE–
"Field elevation one six zero."
"Heading three zero zero."
"One zero thousand five hundred."
"Western five thirty."
"Ten thousand five hundred."
"EMAIR One Ten."

f. Heading. The word "HEADING," followed by the three separate digits of the number of degrees, omitting the word "degrees." Use heading 360 degrees to indicate a north heading.

EXAMPLE−

Heading/Degrees	Phraseology
5 degrees	HEADING ZERO ZERO FIVE
30 degrees	HEADING ZERO THREE ZERO
360 degrees	HEADING THREE SIX ZERO

g. Radar beacon codes. The word squawk followed by the separate digits of the four−digit code.

EXAMPLE−

Code	Phraseology
1000	SQUAWK ONE ZERO ZERO ZERO
2100	SQUAWK TWO ONE ZERO ZERO

h. Runways. The word "RUNWAY" followed by the separate digits of the runway designation. For a parallel runway, state the word "LEFT," "RIGHT," or "CENTER" if the letters "L," "R," or "C" are included in the designation.

EXAMPLE−

Runway Designation	Phraseology
3	RUNWAY THREE
8L	RUNWAY EIGHT LEFT
27R	RUNWAY TWO SEVEN RIGHT

i. Frequencies.

1. The separate digits of the frequency, inserting the word "POINT" where the decimal occurs. When the frequency is in the low/medium frequency or high frequency band, include the word "KILOHERTZ."

EXAMPLE−

Frequency	Phraseology
302 kHz	THREE ZERO TWO KILOHERTZ
5631 kHz	FIVE SIX THREE ONE KILOHERTZ
126.55 MHz	ONE TWO SIX POINT FIVE FIVE
135.275 MHz	ONE THREE FIVE POINT TWO SEVEN FIVE

2. Provide TACAN frequencies by stating the assigned two− or three−digit channel number.

EXAMPLE−
"TACAN channel niner seven."

j. Speeds.

1. The separate digits of the speed followed by the word knots.

EXAMPLE−

Speed	Phraseology
95	NINER FIVE KNOTS
185	ONE EIGHT FIVE KNOTS
250	TWO FIVE ZERO KNOTS

2. For Mach speeds, the word "MACH," followed by the separate digits, and inserting the word "POINT" where the decimal occurs.

EXAMPLE–

Mach Number	Phraseology
0.64	MACH POINT SIX FOUR
0.7	MACH POINT SEVEN
1.5	MACH ONE POINT FIVE

k. Miles. The separate digits of the mileage followed by the word "MILE(S)".

EXAMPLE–

Miles	Phraseology
30	THREE ZERO MILES

2–3–5. 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.

c. In both cases, and if time permits, include the reason for this action.

Section 4. Weather Phraseology

2−4−1. SURFACE OBSERVATIONS

Use the following phraseology and procedures for stating surface weather observations and for information similarly encoded in other aviation weather products and forecasts.

a. Location.

1. Announce the geographic name (not the identifier) once.

EXAMPLE−
"Paducah."

2. When the location name is duplicated within 500 miles, follow the location name with the state name.

EXAMPLE−
"Columbus, Ohio."

3. When weather reports originate at more than one airport at the same geographical location, identify the airport.

EXAMPLE−
"Anchorage, Merrill."
"Chicago, O'Hare."

4. Where it is considered necessary or is requested by the military base commander, broadcast military observations by stating the location, the name of the airport if different, and the controlling military branch.

EXAMPLE−
"Joint Base Andrews."
"Elmendorf, Air Force Base."
"Fort Riley, Marshall Army Air Field."
"Norfolk Naval Station."

b. Special and automated weather reports.

1. If a special report is the most recent observation available, follow the location with the words "SPECIAL WEATHER REPORT," (last two digits of the time) "OBSERVATION."

PHRASEOLOGY−
(Location) SPECIAL WEATHER REPORT, (last two digits of the time) OBSERVATION.

2. If "AUTO" appears after the date/time element and is presented as a singular report, follow the location with the word "AUTOMATED."

PHRASEOLOGY−
(Location) AUTOMATED.

3. If the current report is both a special report and automated, follow the location with the words "SPECIAL WEATHER REPORT, (last two digits of the time) OBSERVATION AUTOMATED."

PHRASEOLOGY−
(Location) SPECIAL WEATHER REPORT, (last two digits of the time) OBSERVATION, AUTOMATED.

c. Missing weather data. If the weather data is not available, state the location and the word "MISSING."

d. Wind direction and speed.

1. Announce surface wind direction and speed by stating the word "WIND" followed by the separate digits of the wind direction to the nearest 10 degrees and the separate digits of the speed.

2. A "G" between two wind speed values is announced as "GUSTS."

3. A “V” between two wind direction values is announced as “VARIABLE.”

4. When indicated, preface the values with the words “VARIABLE BETWEEN,” followed by the first value, the word “AND,” and then the second value.

5. Announce the variability of wind at the end of the wind group.

EXAMPLE−

Wind	Phraseology
00000KT	WIND CALM
26012KT	WIND TWO SIX ZERO AT ONE TWO
29012KT 260V320	WIND TWO NINER ZERO AT ONE TWO, VARIABLE BETWEEN TWO SIX ZERO AND THREE TWO ZERO
30008KT	WIND THREE ZERO ZERO AT EIGHT
36012G20KT	WIND THREE SIX ZERO AT ONE TWO, GUSTS TWO ZERO
VRB04KT	WIND VARIABLE AT FOUR

e. Visibility. State the word “VISIBILITY” followed by the visibility values in miles and/or fractions of miles, except announce values indicated by the figure “0” as “ZERO.” When the reported value is indicated as less than (M), state the visibility as “LESS THAN” followed by the indicated value. Announce the separate digits of whole numbers as applicable.

EXAMPLE−

Contraction	Phraseology
0 SM	VISIBILITY ZERO
1/16 SM	VISIBILITY ONE SIXTEENTH
1/8 SM	VISIBILITY ONE EIGHTH
M ¼ SM	VISIBILITY LESS THAN ONE QUARTER
¾ SM	VISIBILITY THREE QUARTERS
1 ½ SM	VISIBILITY ONE AND ONE−HALF
8 SM	VISIBILITY EIGHT
25 SM	VISIBILITY TWO FIVE

NOTE−
When visibility is less than three miles and variable, this information is reported in the remarks.

f. Runway visual range (RVR).

1. Provide RVR information by stating the runway, the abbreviation “R−V−R,” and the indicated value.

2. A “V” between two RVR values is announced as “VARIABLE.” When indicated, preface the values with the word “VARIABLE,” followed by the first value, the word “TO,” and then the second value.

3. When issued along with other weather elements, transmit these values in the normal sequence used for weather reporting.

EXAMPLE−

RVR	Phraseology
R18/2000V3000FT	RUNWAY ONE EIGHT, R−V−R VARIABLE TWO THOUSAND TO THREE THOUSAND
R26R/2400FT	RUNWAY TWO SIX RIGHT, R−V−R TWO THOUSAND FOUR HUNDRED

4. When there is a requirement to issue an RVR value and a visibility condition greater than (P) or less than (M) the reportable values of the equipment is indicated, state the condition as "MORE THAN" or "LESS THAN" the appropriate minimum or maximum readable value.

EXAMPLE–

RVR	Phraseology
R16/M0600FT	RUNWAY ONE SIX, R–V–R LESS THAN SIX HUNDRED
R36L/M0600V2500FT	RUNWAY THREE SIX LEFT, R–V–R VARIABLE LESS THAN SIX HUNDRED TO TWO THOUSAND FIVE HUNDRED
R36/P6000FT	RUNWAY THREE SIX, R–V–R MORE THAN SIX THOUSAND

g. Weather elements. TBL 2–4–1 depicts sample phraseology for weather element contractions. Intensity refers to precipitation, not descriptors. Announce proximity after the phenomenon to which it refers. Announce descriptors ahead of weather phenomena with the exception of "showers," which are announced after precipitation. TBL 2–4–2 contains a complete list of weather elements and appropriate phraseology.

TBL 2–4–1

Examples of Combining Intensity, Descriptors, and Weather Phenomenon

Contractions	Phraseology
BLSN	BLOWING SNOW
–FZRAPL	LIGHT FREEZING RAIN, ICE PELLETS
FZRA	FREEZING RAIN
FZDZ	FREEZING DRIZZLE
MIFG	SHALLOW FOG
–SHRA	LIGHT RAIN SHOWERS
SHRA	RAIN SHOWERS
SHSN	SNOW SHOWERS
TSRA	THUNDERSTORM, RAIN
+TSRA	THUNDERSTORM, HEAVY RAIN (SHOWERS)[1]
+TSRAGR	THUNDERSTORM, HEAVY RAIN, HAIL
VCSH	SHOWERS IN THE VICINITY
[1]Since thunderstorms imply showery precipitation, "showers" may be used to describe precipitation that accompanies thunderstorms.	

TBL 2−4−2
Weather Elements

Intensity or Proximity 1		Descriptor 2		Precipitation 3		Obscuration 4		Other 5	
−	Light	**MI**	Shallow	**DZ**	Drizzle	**BR**	Mist	**PO**	Well−developed dust/sand whirls
		BC	Patchy	**RA**	Rain	**FG**	Fog	**SQ**	Squalls
	Moderate (no qualifier)	**DR**	Low Drifting	**SN**	Snow	**FU**	Smoke	**FC** **+FC**	Funnel cloud, tornado, or waterspout
		BL	Blowing	**SG**	Snow grains	**DU**	Dust	**SS**	Sandstorm
+	Heavy	**SH**	Showers	**IC**	Ice crystals	**SA**	Sand	**DS**	Duststorm
		TS	Thunderstorm	**PL**	Ice pellets	**HZ**	Haze		
VC	In the vicinity	**FZ**	Freezing	**GR**	Hail	**PY**	Spray		
		PR	Partial	**GS**	Snow pellets	**VA**	Volcanic Ash		
				UP	*Unknown precipitation				
*Automated stations only.									

h. Ceiling and sky coverage.

1. State sky coverage in the same order as reported on the weather observation. Announce ceiling as shown on TBL 2−4−3.

TBL 2−4−3
Ceiling and Sky Coverage

Designator	Phraseology
BKN000[1]	SKY PARTIALLY OBSCURED
BKN000[2]	CEILING LESS THAN FIVE ZERO BROKEN
FEW000[1]	SKY PARTIALLY OBSCURED
FEW000[2]	FEW CLOUDS AT LESS THAN FIVE ZERO
(lowest layer aloft) BKN/OVC	(precede with) CEILING
SCT000[1]	SKY PARTIALLY OBSCURED
SCT000[2]	LESS THAN FIVE ZERO SCATTERED
VV	INDEFINITE CEILING
[1]Surface−based obscurations; requires remarks (for example, RMK FG SCT000, FU BKN000). [2]No remark means the layer is aloft.	

2. State cloud heights in tens, hundreds and/or thousands of feet.

EXAMPLE−

Designator	Phraseology
000[1]	ZERO
003	THREE HUNDRED
018	ONE THOUSAND EIGHT HUNDRED
200	TWO ZERO THOUSAND
[1]Spoken as zero only when used with VV.	

NOTE−
When the ceiling is less than 3,000 feet and variable, the variable limits will be reported in the remarks.

3. Announce sky conditions as indicated in TBL 2−4−4.

TBL 2−4−4
Sky Conditions

Contraction	Phraseology
BKN	(height) BROKEN
CLR[1]	CLEAR BELOW ONE TWO THOUSAND
FEW	FEW CLOUDS AT (height)
OVC	(height) OVERCAST
SCT	(height) SCATTERED
SKC	CLEAR
[1]Automated weather reports.	

4. The following are examples of phraseology of ceiling and sky conditions.

EXAMPLE−

Condition	Phraseology
BKN000 BKN010 BKN050 RMK FG BKN000	SKY PARTIALLY OBSCURED, CEILING ONE THOUSAND BROKEN, FIVE THOUSAND BROKEN, FOG OBSCURING FIVE TO SEVEN EIGHTS OF THE SKY
BKN010	CEILING ONE THOUSAND BROKEN
SCT000 SCT020 OVC035 RMK FG SCT000	SKY PARTIALLY OBSCURED, TWO THOUSAND SCATTERED, CEILING THREE THOUSAND FIVE HUNDRED OVERCAST, FOG OBSCURING THREE TO FOUR EIGHTS OF THE SKY
SCT020 OVC250	TWO THOUSAND SCATTERED, CEILING TWO FIVE THOUSAND OVERCAST
VV000	INDEFINITE CEILING ZERO
VV012	INDEFINITE CEILING ONE THOUSAND TWO HUNDRED

i. Temperature and dew point. Announce surface temperature and dew point by stating the words “TEMPERATURE” or “DEW POINT,” as appropriate, followed by the temperature in degrees Celsius. Announce temperatures below zero by prefixing the word “MINUS” before the values.

EXAMPLE−

Reading	Phraseology
02/M01	TEMPERATURE TWO, DEW POINT MINUS ONE
04/02	TEMPERATURE FOUR, DEW POINT TWO
18/13	TEMPERATURE ONE EIGHT, DEW POINT ONE THREE

j. Altimeter setting.

1. State the word "ALTIMETER" followed by the four digits of the altimeter setting.

EXAMPLE−

Altimeter Setting	Phraseology
A2989	ALTIMETER TWO NINER EIGHT NINER
A3001	ALTIMETER THREE ZERO ZERO ONE
A3025	ALTIMETER THREE ZERO TWO FIVE

2. Identify the source of all altimeter settings when issued, if not given as part of an identified surface observation. Provide the time of the report if more than one hour old.

PHRASEOLOGY−
(airport name) (time of report if more than one hour old) ALTIMETER (setting).

3. If a request for the altimeter setting in millibars is received, announce the separate digits of the millibars equivalent value, using the millibars conversion chart, followed by the word "MILLIBARS." If the millibars setting is not a whole number, always round down.

EXAMPLE−

Millibar Conversion	Phraseology
956.3	ALTIMETER NINER FIVE SIX MILLIBARS
1002.0	ALTIMETER ONE ZERO ZERO TWO MILLIBARS
1058.9	ALTIMETER ONE ZERO FIVE EIGHT MILLIBARS

REFERENCE−
FAA Order JO 7110.10, Para 4−2−5, Routine Radio Contacts.

4. When altimeter is in excess of 31.00:

(a) Advise all aircraft.

PHRASEOLOGY−
ALTIMETER GREATER THAN THREE ONE ZERO ZERO. HIGH PRESSURE ALTIMETER PROCEDURES ARE IN EFFECT.

(b) Advise VFR aircraft to set altimeter to 31.00 en route.

PHRASEOLOGY−
RECOMMEND YOU SET ALTIMETER THREE ONE ZERO ZERO EN ROUTE.

2−4−2. ANNOUNCING MISSING ITEMS

With the exception of the RVR, announce the word "MISSING" when any item or component of a weather report is not reported, or in place of unreadable or obviously incorrect items or portions of weather reports. When appropriate, instead of speaking the name of several locations with missing reports, announce "other scheduled reports missing."

NOTE−
On occasion, a parameter from an automated observation may be reported as missing in the body of the report but is

available as a manually reported parameter in the remarks section. When speaking the report, include the manually reported element in its proper sequence within the report.

2−4−3. WEATHER REMARKS

Announce pertinent remarks from surface weather observations in accordance with FAA Order JO 7340.2, Contractions, and as shown in the following tables. Do not state additive data or other information intended for NWS analysis or processing that does not contribute to the description of the conditions occurring at the station.

a. Sky and ceiling.

EXAMPLE−

Contraction	Phraseology
CIG 005V010	CEILING VARIABLE BETWEEN FIVE HUNDRED AND ONE THOUSAND
CIG 020 RY11	CEILING TWO THOUSAND AT RUNWAY ONE ONE
CB N MOV E	CUMULONIMBUS NORTH MOVING EAST
CBMAM DSNT S	CUMULONIMBUS MAMMATUS DISTANT SOUTH
CLDS TPG MT SW	CLOUDS TOPPING MOUNTAIN SOUTHWEST
CONTRAILS N FL420	CONDENSATION TRAILS NORTH AT FLIGHT LEVEL FOUR TWO ZERO
FRQ LTCIC VC	FREQUENT LIGHTNING IN CLOUD IN THE VICINITY
LWR CLDS NE	LOWER CLOUDS NORTHEAST
OCNL LTGICCG NW	OCCASIONAL LIGHTNING IN CLOUD AND CLOUD TO GROUND NORTHWEST
RDGS OBSCD W−N	RIDGES OBSCURED WEST THROUGH NORTH

b. Obscuring phenomena.

EXAMPLE−

Contraction	Phraseology
BLSN SCT000	BLOWING SNOW OBSCURING THREE TO FOUR−EIGHTS OF THE SKY
DU BKN000	DUST OBSCURING FIVE TO SEVEN−EIGHTS OF THE SKY
FG FU FEW000	FOG AND SMOKE OBSCURING ONE TO TWO−EIGHTS OF THE SKY
FU SCT020	SMOKE LAYER TWO THOUSAND SCATTERED
SN BKN000	SNOW OBSCURING FIVE TO SEVEN−EIGHTS OF THE SKY

c. Visibility.

EXAMPLE−

Contraction	Phraseology
SFC VIS 1/2	SURFACE VISIBILITY ONE−HALF
SFC VIS 15 TWRINC	SURFACE VISIBILITY ONE FIVE, TOWER IN CLOUDS
TWR VIS 3/4	TOWER VISIBILITY THREE−QUARTERS
VIS S 1 W 1/4	VISIBILITY SOUTH ONE, WEST ONE−QUARTER
VIS 1V3	VISIBILITY VARIABLE BETWEEN ONE AND THREE

d. Weather and obstructions to visibility.

EXAMPLE−

Contraction	Phraseology
BCFG S	PATCHY FOG SOUTH
DUST DEVILS NW	DUST DEVILS NORTHWEST
FG DSIPTG	FOG DISSIPATING
FU DRFTG OVR FLD	SMOKE DRIFTING OVER FIELD
FUOCTY	SMOKE OVER CITY
GR 2	HAILSTONES TWO INCHES IN DIAMETER
INTMT −RA	INTERMITTENT LIGHT RAIN
OCNL LTG DSNT NW	OCCASIONAL LIGHTNING DISTANT NORTHWEST
OCNL SHRA	OCCASIONAL MODERATE RAIN SHOWERS
−RA OCNLY +RA	LIGHT RAIN OCCASIONALLY HEAVY
RAB30	RAIN BEGAN AT THREE ZERO
SNB15E40	SNOW BEGAN AT ONE FIVE, ENDED AT FOUR ZERO
SNINCR 5/10	SNOW INCREASE FIVE INCHES DURING PAST HOUR, TEN INCHES ON THE GROUND
TS OHD MOV E	THUNDERSTORM OVERHEAD, MOVING EAST
FRQ LTGCG TS W MOV E	FREQUENT LIGHTNING CLOUD TO GROUND, THUNDERSTORM WEST MOVING EAST
UNCONFIRMED TORNADO 15W OKC MOV NE 2015	UNCONFIRMED TORNADO ONE FIVE WEST OF OKLAHOMA CITY, MOVING NORTHEAST SIGHTED AT TWO ZERO ONE FIVE ZULU
WET SN	WET SNOW

e. Wind.

EXAMPLE−

Contraction	Phraseology
PK WND 33048/22	PEAK WIND THREE THREE ZERO AT FOUR EIGHT OCCURRED AT TWO TWO PAST THE HOUR
WSHFT 30	WIND SHIFTED AT THREE ZERO

f. Pressure.

EXAMPLE−

Contraction	Phraseology
PRESFR	PRESSURE FALLING RAPIDLY
PRESRR	PRESSURE RISING RAPIDLY

g. Maintenance data.

EXAMPLE−

RVR	Phraseology
PNO	PRECIPITATION AMOUNT NOT AVAILABLE
RVRNO	R−V−R INFORMATION NOT AVAILABLE
TSNO	THUNDERSTORM/LIGHTNING INFORMATION NOT AVAILABLE
VISNO	VISIBILITY SENSOR INFORMATION NOT AVAILABLE

2−4−4. WEATHER ADVISORIES

a. When announcing weather advisories, include the complete advisory description including the product name and alphanumeric identification. Specify eastern, central, or western section if applicable.

PHRASEOLOGY−
AIRMET ZULU FOR ICING or AIRMET FOR ICING
G−AIRMET FOR ICING or GRAPHICAL AIRMET FOR ICING
or
G−AIRMET ZULU FOR ICING or GRAPHICAL AIRMET ZULU FOR ICING
ALERT WEATHER WATCH, ONE ZERO SEVEN FOR SEVERE THUNDERSTORMS
CONVECTIVE SIGMET TWO SEVEN EASTERN
HOUSTON CENTER WEATHER ADVISORY ONE, ISSUANCE TWO
SIGMET WHISKEY THREE

b. Do not read the OUTLOOK section of Convective SIGMETs when stating the advisory. Data contained in the OUTLOOK concerning convective activity location, movement, and intensity may be extracted for compilation in forecast summarizations.

EXAMPLE−
"Convective SIGMET one seven eastern from five zero south of St. Petersburg to three zero south of Columbus, line of thunderstorms three five miles wide moving east at one five knots. Maximum tops four seven thousand."

c. VFR Flight Not Recommended (VNR). When VFR flight is proposed and sky conditions or visibilities are reported or forecast, surface or aloft, that, in your judgment, would make flight under VFR doubtful, include one of the following statements:

PHRASEOLOGY−
V−F−R FLIGHT NOT RECOMMENDED (location if applicable) DUE TO (conditions)
or
V−F−R NOT RECOMMENDED (location if applicable) DUE TO (conditions)

EXAMPLE−
"There are broken clouds along the entire route between niner and one one thousand feet. With the approach of a cold front, these clouds are forecast to become overcast and to lower to below seven thousand with mountains and passes becoming obscured. V−F−R flight not recommended between Salt Lake City and Grand Junction after two two zero zero Zulu."
"V−F−R not recommended in the Seattle area until early afternoon. The current weather at Seattle is indefinite ceiling three hundred, visibility one, mist, and little improvement is expected before one eight zero zero Zulu."

2−4−5. RADAR

When stating precipitation intensity from a radar display (for example, NEXRAD), use the following four categories as appropriate:

a. Light (equates to radar return levels of less than 30 dBZ).

b. Moderate (equates to radar return levels of 30 to 40 dBZ).

c. Heavy (equates to radar return levels of greater than 40 to 50 dBZ).

d. Extreme (equates to radar return levels of greater than 50 dBZ).

2−4−6. WINDS AND TEMPERATURES ALOFT FORECAST

When announcing the winds and temperatures aloft forecast, use the following phraseology and procedures:

a. State the altitude, then announce wind direction and speed by the separate digits of the wind direction to the 5− or 10−degree multiple, the word "AT," and the separate digits of the speed.

NOTE−
Announcing the wind direction in 5− or 10−degree multiples is dependent on the operating system of the specialist.

b. When the forecast speed is less than five knots, the coded group is 9900 and read "LIGHT AND VARIABLE."

c. Encoded wind speed 100 to 199 knots have 50 added to the direction code and 100 subtracted from the speed.

d. If wind speed is forecast at 200 knots or greater, the wind group is coded as 199 knots.

EXAMPLE−
7799 is decoded 270 degrees at 199 knots or greater.

e. A six−digit group includes forecast temperature. Provide temperatures on request only, stating the word "TEMPERATURE," followed by the word "MINUS," as appropriate, and the separate digits.

EXAMPLE−

Coded	Phraseology
2707	(altitude) TWO SEVEN ZERO AT SEVEN
7799	(altitude) TWO SEVEN ZERO AT ONE NINER NINER OR GREATER
850552	(altitude) THREE FIVE ZERO AT ONE ZERO FIVE, TEMPERATURE MINUS FIVE TWO
9900+00	(altitude) LIGHT AND VARIABLE, TEMPERATURE ZERO

Section 5. Aviation Phraseology

2−5−1. RELAY OF ATC COMMUNICATIONS

Prefix a clearance, information, or a request for information which will be relayed from a control facility to an aircraft with the appropriate phrase "A−T−C CLEARS," "A−T−C ADVISES," or "A−T−C REQUESTS."

2−5−2. FACILITY IDENTIFICATION

Identify facilities as follows:

a. In−flight position. State the name of the FSS followed by the word "RADIO," and position if appropriate.

EXAMPLE−
"Fairbanks Radio."
"Miami Radio, In−flight."

b. Flight data position. State the geographical name of the FSS or service provider, followed by the words "FLIGHT DATA."

EXAMPLE−
"Juneau Flight Data."
"Forth Worth Flight Data."
"(Service Provider Name) Flight Data."

c. When calling or replying on an interphone line that connects only two facilities, you may omit the facility's name.

EXAMPLE−
"Flight Data."
"In−flight, clearance request."

d. When calling or replying on interphone lines connecting more than one facility, state the name of the FSS followed by the word "RADIO."

EXAMPLE−
"Cleveland Radio."

e. When answering public access telephone lines, state the geographical name of the FSS and the words "FLIGHT SERVICE." Specialists in contract facilities must answer public access lines by stating the name of the service provider and type.

EXAMPLE−
"Juneau Flight Service."
"(Service Provider Name) Flight Service."

2−5−3. AIRCRAFT IDENTIFICATION

a. Civilian. State the aircraft type, the model, the manufacturer's name, or the prefix "NOVEMBER" (when applicable), followed by the numbers/letters of the aircraft registration.

EXAMPLE−
"Bonanza one two three four tango."
"Mooney two three zero five Romeo."
"Cirrus one four two Quebec."
"November one two three four golf."

NOTE−
The prefix November denotes a U.S. aircraft registry.

1. Air carrier and other civilian aircraft having FAA authorized call signs. State the call sign, in accordance with FAA Order JO 7340.2, Contractions, followed by the flight number in group form.

EXAMPLE–
"American five twenty−one."
"United one zero one."
"General Motors thirty−fifteen."
"Delta one hundred."

2. If aircraft identification becomes a problem, the specialist must restate the call sign after the flight number of the aircraft involved.

EXAMPLE–
"American five twenty−one, American."
"Commuter six eleven, Commuter."
"General Motors thirty−seven, General Motors."

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

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–
On initial contact.
"Tango Mooney five five five two Quebec."
or
"Tango November five five five two Quebec."
On subsequent contacts:
"Mooney five two Quebec."
or
"November five two Quebec."

b. MEDEVAC aircraft.

1. 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."

NOTE–
Use of "MEDEVAC" call sign indicates that operational priority is requested.

2. Civilian airborne ambulance. State the word "MEDEVAC," followed by the numbers/letters of the registration number.

EXAMPLE–
"MEDEVAC two six four six X−ray."

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

1. The service name followed by the word "COPTER," when appropriate, and the last five digits of the serial number.

EXAMPLE–
"Guard two six three."
"Army copter three two one seven six."
"Coast Guard six one three two seven."
"Navy five six seven one three."

2. If aircraft identification becomes a problem when the above procedures are used, the specialist must restate the call sign after the flight number of the aircraft involved in accordance with FAA Order JO 7210.3, paragraph 2−1−14, Aircraft Identification Problems, will apply.

EXAMPLE–
"Army copter three two one seven six, Army copter."
"Coast Guard six one three two seven, Coast Guard."

3. Special military operations. State one of the following followed by the last five digits of the serial number:

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

EXAMPLE−
"AIR EVAC one seven six five two."

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

EXAMPLE−
"Air Force rescue six one five seven niner."

(c) Air mobility command. "REACH."

EXAMPLE−
"Reach seven eight five six two."

(d) Special air mission. "SAM."

EXAMPLE−
"SAM niner one five six two."

(e) U.S. Air Force contract aircraft. "CAMBER."

EXAMPLE−
"CAMBER seven five eight two six."

4. Military tactical and training.

(a) U.S. Air Force, Air National Guard, Military District of Washington priority aircraft, and U.S. Air Force civil disturbance aircraft. Pronounceable words of three to six letters followed by a one to five digit number.

EXAMPLE−
"Paul two zero."
"Pat one five seven."
"Graydog four."

(b) When the "Z" suffix described in paragraph 6−3−3, U.S. Air Force/U.S. Navy Undergraduate Pilots, is added to identify aircraft piloted by U.S. Air Force/U.S. Navy undergraduate pilots, the call sign will be limited to a combination of six characters. Do not use this suffix in ground−to−air communication.

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

EXAMPLE−
"Marine four Charlie two three six."
"Navy golf alpha two one."

d. Foreign registry. State one of the following:

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

EXAMPLE−
"Stationair F−L−R−B."
"C−F−L−R−B."
"Canadian foxtrot Lima Romeo bravo."

NOTE−
Letters may be spoken individually or phonetically.

2. Air carrier. The abbreviated name of the operating company followed by:

(a) The letters or digits of the registration or call sign.

EXAMPLE−
"Air France F−L−R−L−G."

NOTE−
Letters may be spoken individually or phonetically in accordance with the format used by the pilot.

(b) The flight number in group form, or separate digits may be used if that is the format used by the pilot.

EXAMPLE−
"Scandinavian six eight."
"Scandinavian sixty−eight."

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

EXAMPLE−
"Brazilian Air Force five three two seven six."
"Canforce five six two seven."

e. Presidential aircraft and Presidential family aircraft.

1. 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."

2. When the President is aboard a civilian aircraft, state the words "EXECUTIVE ONE."

3. 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."

f. Vice Presidential aircraft.

1. 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."

2. When the Vice President is aboard a civilian aircraft, state the words "EXECUTIVE TWO."

3. 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."

g. Department of Transportation (DOT) and FAA flights. TBL 2−5−1 shows the alphanumeric identifiers and radio/interphone call signs to be used 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.

TBL 2−5−1
DOT and FAA Identifiers and Call Signs

Title	Identifier	Call Sign
DOT Secretary	DOT−1	Transport−1
DOT Deputy Secretary	DOT−2	Transport−2
FAA Administrator	FAA−1	Safeair−1
FAA Deputy Administrator	FAA−2	Safeair−2

EXAMPLE−
"Grand Forks Radio, Transport two, (message)."
"Miami Radio, Safeair one, (message)."

h. Other special flights.

1. 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."

2. U.S. Air Force 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."

3. Flights conducted by U.S. governmental organizations (federal, state, local, tribal, and territorial) using FAA authorized U.S. special call signs for purposes of national security and defense, homeland security, intelligence, and law enforcement. These flights may be identified in accordance with FAA Order JO 7110.67, Air Traffic Management Security Procedures and Requirements for Special Operations.

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

2−5−4. DESCRIPTION OF AIRCRAFT TYPES

Except for super or heavy aircraft, describe aircraft as follows:

a. Military.

1. Military designator with number spoken in group form; or

2. Service and type; or

3. Type only if no confusion or misidentification is likely.

EXAMPLE−
"Air Force bomber."
"B−One."
"Bomber."
"F−fifteen."
"Fighter."
"Navy fighter."

b. Air carrier.

1. Manufacturer's model or type designator.

2. Add the manufacturer's name, company name or other identifying features when confusion or misunderstanding is likely.

EXAMPLE−
"American M−D eighty."
"Boeing seven−fifty−seven."
"L−ten eleven."

c. General aviation and air taxi.

1. Manufacturer's model or type designator.

2. Manufacturer's name, or add color when considered advantageous.

EXAMPLE−
"Airliner."
"Blue and white King Air."
"Cessna four−oh−one."
"Sikorsky s−seventy−six."
"Green Apache."
"P−A twenty−two."
"Tri−Pacer."

2−5−5. AIRCRAFT EQUIPMENT CODES

When communicating this information (aircraft equipment suffixes) state the aircraft type, the word "SLANT," and the appropriate phonetic letter equivalent of the suffix.

EXAMPLE−
"Boeing seven−oh−seven slant Romeo."
"D−C six slant tango."
"F−eight−e slant papa."
"F−four−c slant November."

2−5−6. AIRWAYS AND ROUTES

Describe airways, routes, or jet routes as follows:

a. VOR/VORTAC/TACAN airways or jet routes. State the word "VICTOR" or the letter "J," followed by the number of the airway or route in group form.

EXAMPLE−
"J five thirty−three."
"Victor twelve."

b. VOR/VORTAC/TACAN alternate airways. State the word "VICTOR," followed by the number of the airway in group form and the alternate direction.

EXAMPLE−
"Victor twelve south."

c. Colored/L/MF airways. State the color of the airway followed by the number in group form.

EXAMPLE−
"Blue eighty−one."

d. Named routes. State the words "NORTH AMERICAN ROUTE" or "BAHAMA ROUTE," followed by the number of the route in group form.

EXAMPLE−
"North American route fifty."
"Bahama route fifty−five victor."

e. Military training routes (MTRs). State the letters "I−R" or "V−R," followed by the number of the route in group form.

EXAMPLE−
"I−R five thirty−one."
"V−R fifty−two."

f. Published RNAV routes.

1. High altitude. State the letter "Q" followed by the route number in group form.

EXAMPLE−
"Q one forty−five."

2. Low altitude. State the letter of the route phonetically, followed by the number of the route in group form.

EXAMPLE−
"Tango two ten."

2−5−7. NAVAID TERMS AND FIXES

a. Announce navigation aids (NAVAID) as follows in TBL 2−5−2:

TBL 2−5−2
NAVAID Terms

Contraction	Phraseology
DME	D−M−E
GNSS	G−N−S−S
GPS	G−P−S
ILS	I−L−S
LOM	LOCATOR OUTER MARKER
NDB	N−D−B
RNAV	R−NAV
TACAN	TACK−AN
VOR	V−O−R
VORTAC	VOR− (as in "vortex") TACK
WAAS	WAHS

b. Describe radials, arcs, courses, bearings, and quadrants of NAVAIDs as follows:

1. VOR/VORTAC/TACAN/GPS waypoints. State the name of the NAVAID or GPS waypoint followed by the separate digits of the radial/azimuth/bearing (omitting the word "degrees") and the word "RADIAL/AZIMUTH/BEARING."

EXAMPLE−
"Appleton zero five zero radial."

2. Arcs about VOR−DME/VORTAC/TACAN NAVAIDs. State the distance in miles from the NAVAID followed by the words "MILE ARC," the direction from the NAVAID in terms of the eight principal points of the compass, the word "OF," and the name of the NAVAID.

EXAMPLE−
"Two zero mile arc southwest of Kirksville V−O−R."

3. Quadrant within a radius of NAVAID. State direction from NAVAID in terms of the quadrant (for example, NE, SE, SW, NW), followed by the distance in miles from the NAVAID.

EXAMPLE−
"Cleared to fly northeast quadrant of Philipsburg VORTAC within four zero mile radius."

REFERENCE−
P/CG Term − Quadrant.

4. Non−directional beacons. State the course to or the bearing from the radio beacon, omitting the word "DEGREE," followed by the words "COURSE TO" or "BEARING FROM," the name of the radio beacon, and the words "RADIO BEACON."

EXAMPLE−
"Three four zero bearing from Randolph radio beacon."

5. Navigation reference system (NRS) waypoint. State the single letter corresponding to the ICAO flight information region (FIR) identifier, followed by the letter corresponding to the FIR subset (ARTCC area for the CONUS), the latitude increment in single digit or group form, and the longitude increment.

EXAMPLE–
"Kilo delta three four uniform."
"Kilo delta thirty−four uniform."

c. Describe fixes determined by reference to a radial/localizer/azimuth and distance from a VOR−DME, VORTAC, TACAN, or ILS−DME as follows:

1. When a fix is not named, state the name of the NAVAID, followed by a specified radial/localizer/azimuth, and state the distance in miles followed by the phrase "MILE FIX."

EXAMPLE–
"Appleton zero five zero radial three seven mile fix."
"Reno localizer back course four mile fix."

2. Use specific terms to describe a fix. Do not use expressions such as "passing Victor twelve" or "passing J eleven."

d. Describe waypoints charted on a standard instrument departure (SID), standard terminal arrival route (STAR), en route chart, or approach plate by stating the name followed by the word "WAYPOINT."

EXAMPLE–
"Shaum waypoint."

2−5−8. RUNWAY CONDITIONS

a. State factual information as reported by airport management concerning the condition of the runway surface and describing the accumulation of precipitation. Furnish quality of braking action as received from pilots to all aircraft as follows:

1. Describe the quality of braking action using the terms "good," "good to medium," "medium," "medium to poor," "poor," or "nil." If the pilot reports braking action in other than the approved terms, ask them to categorize braking action in these terms.

2. Include the type of aircraft from which the report is received.

EXAMPLE–
"All runways covered by packed snow six inches deep."
"Braking action poor reported by a Boeing seven thirty−seven."

3. If the braking action report affects only a portion of a runway, obtain enough information from the pilot to describe braking action in terms easily understood by other pilots.

EXAMPLE–
"Braking action poor first half of runway, reported by a Gulfstream two."
"Braking action poor beyond the intersection of runway two seven, reported by a Boeing seven thirty−seven."

4. Use descriptive terms (for example, first/last half of the runway) rather than landmark descriptions (for example, opposite the fire station, or south of a taxiway).

b. State runway friction measurement readings/values as received from airport management to aircraft as follows:

1. At airports with friction measuring devices, provide runway condition codes (RwyCC), as received from airport management, to pilots on request. State the runway number followed by the RwyCC for each of the three runway zones, and the time of the report in UTC.

EXAMPLE–
"Runway two seven, runway condition code two, two, one, at one zero one eight ZULU."
"Runway three five, RCC two, two, one, at one zero one eight ZULU."
"Runway two two, RCC is three for all three sections of the runway with a 100 percent ¼ inch dry snow, sanded, observed at one five zero eight ZULU."
"Runway one seven, runway condition code touchdown two, midpoint two, rollout one, at one zero one eight ZULU."

NOTE−
Due to the range of variation and complexity of runway condition reports, phraseology may vary. Specialists must exercise good judgment when using nonstandard phraseology to aid in comprehension.

2. Issue the runway surface condition and/or the runway condition reading (RCR), if provided, to all U.S. Air Force and Air National Guard aircraft. Issue the RCR to other aircraft upon request.

EXAMPLE−
"Ice on runway, R−C−R zero five, patchy."

NOTE−
The U.S. Air Force has established RCR procedures for determining the average deceleration readings of runways under conditions of water, slush, ice, or snow. The use of RCR code is dependent upon a pilot's having a "stopping capability chart" specifically applicable to his/her aircraft. U.S. Air Force offices furnish RCR information at airports serving U.S. Air Force and Air National Guard aircraft.

Chapter 3. Emergency Services

Section 1. General

3−1−1. EMERGENCY DETERMINATION

Because of the infinite variety of possible emergency situations, specific procedures cannot be prescribed. However, when it is believed an emergency exists or is imminent, take a course of action which appears to be most appropriate under the circumstances and which most nearly conforms to the instructions in this manual.

a. An emergency can be either a **DISTRESS** or **URGENCY** condition, as defined in the Pilot/Controller Glossary.

b. A pilot who encounters a DISTRESS condition should declare an emergency by beginning the initial communication with the word "**MAYDAY**," preferably repeated three times. For an URGENCY condition, "**PAN−PAN**" should be used in the same manner.

c. If **"**MAYDAY**"** or **"**PAN−PAN**"** are not used but there is belief an emergency or urgent situation exists, handle it as though it is an emergency.

d. Consider an aircraft emergency exists and inform the appropriate control facility when:

1. An emergency is declared by any of the following:

(a) The pilot.

(b) The avionics system (for example, an emergency autoland system).

(c) Facility personnel.

(d) Official responsible for the operation of the aircraft.

2. There is unexpected loss of radio communications with any VFR aircraft.

3. Reports indicate the aircraft has made a forced landing, is about to do so, or its operating efficiency is so impaired that a forced landing will be necessary.

4. Reports indicate the crew has abandoned the aircraft or is about to do so.

5. Intercept or escort aircraft services are requested.

6. The need for ground rescue appears likely.

7. An emergency locator transmitter (ELT) signal is heard or reported.

REFERENCE−
FAA Order JO 7110.10, Para 3−1−4, Responsibility, Subpara c.
FAA Order JO 7110.10, Para 3−2−5, ELT Signals.

3−1−2. OBTAINING INFORMATION

Use the information provided or solicit more information as necessary to assist the distressed aircraft. Provide assistance that is consistent with the requests of the pilot. If you believe an alternative course of action may prove more beneficial, transmit your recommendation(s) to the pilot.

REFERENCE−
14 CFR Section 91.3, Responsibility and Authority of Pilot in Command.

3−1−3. PROVIDING ASSISTANCE

Provide maximum assistance to aircraft in distress. Enlist the services of available radar facilities operated by the FAA, the military services, and the Federal Communications Commission, as well as their emergency services and facilities, when the pilot requests or when you deem necessary.

3−1−4. RESPONSIBILITY

a. While in communication with an aircraft in distress, handle the emergency and coordinate the activities of assisting facilities. Transfer this responsibility to another facility only when better handling of the emergency will result.

b. Upon receipt of information about an aircraft in distress, alert the appropriate control facility and forward the following information when available:

NOTE−
Notifying the appropriate control facility about a VFR aircraft emergency allows provision of IFR separation if considered necessary.

1. Facility/sector and position calling.

2. Nature of the emergency.

3. Flight plan, including color of aircraft, if known.

4. Time of last transmission received, by whom, and frequency used.

5. Last known position, estimated present position, and maximum range of flight of the aircraft based on remaining fuel and airspeed.

6. Action taken by reporting facility and proposed action.

7. Number of persons on board.

8. Fuel status.

9. Position of other aircraft near the aircraft's route of flight, when requested.

10. Whether an ELT signal has been heard or reported in the vicinity of the last known position.

11. Other pertinent information.

c. Notify the ARTCC of all heard or reported ELT signals.

NOTE−
The ARTCC is responsible for receiving and relaying all pertinent ELT signal information to the appropriate authorities.

d. If the aircraft is transponder−equipped and not on an IFR flight plan, instruct the pilot to squawk code 7700.

PHRASEOLOGY−
SQUAWK SEVEN SEVEN ZERO ZERO.

3−1−5. COORDINATION

a. Request assistance from other facilities as soon as possible, particularly if radar is available.

b. Coordinate efforts to the extent possible to assist any aircraft believed overdue, lost, or in emergency status.

c. Notify the operations supervisor or specialist−in−charge as soon as practicable.

3−1−6. RECORDING INFORMATION

Record all actions taken in the provision of emergency services in the operational system. Locally approved procedures may be used to manually record data during heavy traffic periods or system outages and should be logged in the operational system as soon as practicable.

Section 2. Emergency Assistance

3−2−1. INFORMATION REQUIREMENTS

a. Start assistance as soon as enough information has been obtained upon which to act. Information requirements will vary, depending on the existing situation. Minimum required information for in−flight emergencies is:

1. Aircraft identification, type, and transponder.

2. Nature of the emergency.

3. Pilot request.

b. After initiating action, provide the altimeter setting, and obtain the following items or any other pertinent information from the pilot or aircraft operator as necessary:

1. Aircraft altitude.

2. Fuel remaining, in time.

3. Pilot reported weather.

4. Pilot capability for IFR flight.

5. Time and place of last known position.

6. Heading since last known position.

7. Airspeed.

8. Navigation equipment capability.

9. NAVAID signals received.

10. Visible landmarks.

11. Aircraft color.

12. Number of people on board.

13. Point of departure and destination.

14. Emergency equipment on board.

3−2−2. FREQUENCY CHANGES

Provide assistance on the initial contact frequency. Change frequencies only when there is a valid reason. Advise the pilot to return to the initial frequency if unable to establish contact.

3−2−3. ALTITUDE CHANGE FOR IMPROVED RECEPTION

If deemed necessary, and if weather and circumstances permit, recommend the aircraft maintain or increase altitude to improve communications or surveillance coverage.

3−2−4. VFR AIRCRAFT IN WEATHER DIFFICULTY

If an aircraft operating under VFR requests assistance when it encounters, or is about to encounter, IFR weather conditions, determine the facility best able to provide service. Advise the pilot of the reason for the change, and request the pilot contact the appropriate control facility. Inform that facility of the situation. If the pilot is unable to communicate with the control facility, relay information and clearances.

3−2−5. ELT SIGNALS

When an ELT signal is heard or reported:

a. Notify the appropriate ARTCC.

b. Solicit the assistance of other aircraft known to be operating in the signal area.

c. If the ELT signal report was received from an airborne aircraft, attempt to obtain the following information and relay to ARTCC:

1. Aircraft position and time signal was first heard.

2. Aircraft position and time the signal was last heard.

3. Aircraft position at maximum signal strength.

4. Flight altitude.

5. Frequency of the emergency signal (for example, 121.5, 243.0, or 406).

d. Attempt to obtain fixes or bearings on the signal and forward any information obtained to the ARTCC.

NOTE−
Fix information, in relation to a VOR or a VORTAC (radial distance), facilitates accurate ELT plotting by the RCC and should be provided when possible.

e. In addition to the above, when the ELT signal strength indicates the signal may be emanating from somewhere on an airport or in the vicinity, notify the on−site Technical Operations (Tech Ops) personnel.

f. Air traffic personnel must not leave their required duty stations to locate an ELT signal source.

g. Attempt to locate the signal source by contacting adjacent airports not already checked by other ATC facilities. Forward all information obtained and action taken to the ARTCC.

h. Notify the ARTCC if the signal source is located and whether the aircraft is in distress, plus any action taken or proposed for silencing the transmitter.

i. Notify the ARTCC if the signal terminates prior to location of the source.

NOTE−
1. *The ARTCC serves as the point of contact for collecting information and coordinating with RCC on all ELT signals.*

2. *Operational ground testing of ELT has been authorized during the first five minutes of each hour. To avoid confusing the tests with an actual alarm, the testing is restricted to no more than three audio sweeps.*

3. *Portable, hand carried receivers assigned to air traffic facilities (where no Tech Ops personnel are available) may be loaned to responsible airport personnel or local authorities to assist in locating signal source.*

3−2−6. 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 the operations supervisor, specialist−in−charge, or facility 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 that aircraft, take the following actions as appropriate:

NOTE−
1. *A specific threat may be directed at an aircraft registry or tail number, the air carrier flight number, the name of an operator, crew member or passenger, the departure/arrival point or times, or combinations thereof.*

2. *Suspicious activity is covered in FAA Order JO 7610.4, Chapter 7, Procedures for Handling Suspicious Flight Situations and Hijacked Aircraft. Military facilities would report a general threat through the chain of command or according to service directives.*

1. Advise the pilot of the threat.

2. Report the threat to the DEN ATSC at (540) 422−4423/4424/4425. If unable to contact the DEN ATSC notify the TSA/TSOC directly at (703) 563−3400.

NOTE−
Operations supervisors are expected to notify the appropriate offices, agencies, and operators/air carriers according to applicable plans, directives, FAA Order JO 7210.3, Facility Operation and Administration, or military directives.

3. Ask if the pilot desires to climb or descend to an altitude that would equalize or reduce the outside air pressure/existing cabin air pressure differential. Obtain and relay an appropriate clearance considering minimum en route altitude, minimum obstruction clearance altitude, minimum reception altitude, 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, weather conditions, 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. Obtain and relay clearance to a new destination, if requested.

6. When a pilot requests technical assistance or if it is apparent that such assistance is needed, do NOT suggest what actions the pilot should take concerning a bomb but obtain the following information and notify the operations supervisor or specialist−in−charge who will contact the DEN ATSC or TSA/TSOC as explained in subparagraph a2 above.

(a) Type, series, and model of the aircraft.

(b) Precise location/description of the bomb device, if known.

(c) Other pertinent details.

NOTE−
This information is needed by TSA explosives experts so that the situation can be assessed and immediate recommendations made to the pilot. The TSA explosives experts may not be familiar with all military aircraft configurations but can offer technical assistance which would be beneficial to the pilot.

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 airport 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 121. If the pilot insists on taking off and in your opinion the operation will not adversely affect other traffic, relay an ATC clearance.

REFERENCE−
14 CFR Section 121.538, Aircraft 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 impracticable, or if the pilot takes an alternative action, such as parking and offloading immediately, advise other aircraft to remain clear of the suspect aircraft by at least 100 yards if able.

NOTE−
Passengers deplaning may be of paramount importance and must be considered before the aircraft is parked or moved away from the service areas. The decision to use ramp facilities rests with the pilot, aircraft operator, and/or airport manager.

c. If you are unable to inform the suspect aircraft of a bomb threat or if you lose contact with the aircraft, advise the operations supervisor or specialist−in−charge to contact the DEN ATSC to relay pertinent details to other sectors or facilities, as deemed necessary.

d. When a pilot reports the discovery of a bomb or suspected bomb on an aircraft, determine the pilot's intentions and comply with pilot's requests insofar as possible. Take all the actions discussed in the preceding paragraphs which may be appropriate under the existing circumstances.

e. The handling of aircraft when a hijacker has or is suspected of having a bomb requires special considerations. Be responsive to the pilot's requests and notify the operations supervisor or specialist−in−charge. Apply hijacking procedures in accordance with FAA Order JO 7610.4, Sensitive Procedures and Requirements for Special Operations, Chapter 7, and if needed, offer assistance to the pilot according to the preceding paragraphs.

3−2−7. EXPLOSIVE CARGO

When you receive information that an emergency landing will be made with explosive cargo aboard, inform the pilot of the safest or least congested airport areas. Relay the explosive cargo information to:

a. The emergency equipment crew.

b. The airport management.

c. The appropriate military agencies when requested by the pilot.

3−2−8. EXPLOSIVE DETECTION K−9 TEAMS

Take the following actions upon receipt of a pilot request for the location of the nearest explosive detection K−9 team.

a. Obtain the aircraft's identification and position; advise the operations supervisor or specialist−in−charge of the pilot's request.

b. Relay the pilot's request to the FAA Washington Operations Center (WOC), (202) 267-3333, and provide the aircraft identification and position.

c. The WOC will provide the nearest location. Have the WOC standby while the information is relayed to the pilot.

d. If the pilot wishes to divert to the airport location provided, obtain an estimated time of arrival (ETA) from the pilot, and advise the operations supervisor or specialist−in−charge.

e. After the aircraft destination has been determined, provide the ETA to the WOC. The WOC will then notify the appropriate airport authority at the diversion airport. In the event the K−9 team is not available at this airport, the WOC will advise the air traffic facility and provide them with the secondary location. Relay this to the pilot concerned for appropriate action.

3−2−9. IN−FLIGHT EQUIPMENT MALFUNCTIONS

When a pilot reports an in−flight aircraft equipment malfunction, take the following action:

a. Request the nature and extent of any special handling desired.

NOTE−
14 CFR 91.187 requires the pilot in command of each aircraft operated in controlled airspace under IFR to report as soon as practicable to ATC any malfunctions of navigational, approach, or communication equipment occurring in−flight. This includes the degree to which the capability of the aircraft to operate IFR in the ATC system is impaired and 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 any special handling requested or being provided to other specialists or facilities who will subsequently handle the aircraft.

3−2−10. MINIMUM FUEL

If an aircraft declares a state of "minimum fuel," inform the facility to whom control jurisdiction is transferred to 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 the fuel supply has reached a state whereupon reaching destination, any undue delay cannot be accepted. 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.

3−2−11. EMERGENCY SECURITY CONTROL OF AIR TRAFFIC (ESCAT)

The 32 CFR 245 Plan for the Emergency Security Control of Air Traffic (ESCAT) outlines responsibilities, procedures, and instructions for the security control of civilian and military air traffic under various emergency conditions. When notified of ESCAT implementation, follow the instructions received from the Joint Air Traffic Operations Command (JATOC), ATCSCC, ARTCC, and/or DEN ATSC. FSS specialists must participate in tests except where such participation will involve the safety of aircraft.

NOTE−
1. *To ensure that ESCAT actions can be taken expeditiously, periodic ESCAT tests will be conducted in connection with NORAD exercises. Tests may be local, regional, or national in scope.*

2. *During ESCAT tests, all actions will be simulated.*

REFERENCE−
FAA Order JO 7610.4, Chapter 6, Emergency Security Control of Air Traffic (ESCAT).

3−2−12. SUSPICIOUS UNMANNED AIRCRAFT ACTIVITY

Notify the operations supervisor or specialist−in−charge of aircraft/pilot activity, including unmanned aerial vehicles (UAV) or unmanned aircraft systems (UAS) operations that are considered suspicious, as prescribed in FAA Orders JO 7610.4, JO 7210.3 and JO 7210.632.

REFERENCE−
FAA Order JO 7610.4, Para 7−3−1, Application.
FAA Order JO 7210.3, Para 2−1−30, Reporting Suspicious Aircraft/Pilot Activities.
FAA Order JO 7210.3, Para 2−1−33, Reporting Suspicious UAS Activities.
FAA Order JO 7210.632, Appendix A, Mandatory Occurrence Report Criteria.

Section 3. Aircraft Orientation

3−3−1. ACTIONS REQUIRED

When providing orientation services to an aircraft in emergency status, determine the following:

a. If the aircraft is in visual or instrument meteorological conditions, fuel remaining in time, altitude, and heading.

b. If the aircraft is operating in instrument meteorological conditions, coordinate with the appropriate control facility.

c. If the aircraft is on a flight plan. If the aircraft is not on an IFR flight plan and is in visual meteorological conditions, advise the pilot to remain VFR.

3−3−2. SAFE ALTITUDES FOR ORIENTATIONS

a. Providing a safe altitude, during an orientation, is advisory in nature.

b. Safe altitude computations, once the aircraft position is known, are as follows:

1. Locate the maximum elevation figure on the appropriate VFR sectional chart.

2. To the maximum elevation figure:

(a) Add 1,000 feet over non−mountainous terrain; or

(b) Add 2,000 feet over mountainous terrain.

c. Designated mountainous/non−mountainous areas are found in 14 CFR 95, subpart b.

3−3−3. GENERAL

a. Orient an aircraft by the means most appropriate to the circumstances.

b. If necessary, plot the flight path of the aircraft on a chart or operating system, including position reports, predicted positions, possible range of flight, and any other pertinent information.

c. Solicit the assistance of other aircraft known to be operating near the aircraft in distress.

d. Forward the information to the appropriate control facility.

e. The following offers guidance for providing orientation services:

1. Advise the pilot to remain VFR, and provide local altimeter setting.

PHRASEOLOGY−
MAINTAIN V−F−R AT ALL TIMES. ADVISE IF HEADING OR ALTITUDE CHANGE IS NECESSARY TO REMAIN V−F−R. (Location) ALTIMETER (setting).

2. Obtain heading and altitude. Advise the pilot to maintain straight and level flight and to align the heading indicator with the magnetic compass.

PHRASEOLOGY−
MAINTAIN STRAIGHT AND LEVEL FLIGHT. RESET YOUR HEADING INDICATOR TO AGREE WITH YOUR MAGNETIC COMPASS. AFTER YOU HAVE DONE THIS, SAY YOUR HEADING AND ALTITUDE.

3. Determine the weather conditions and fuel status.

PHRASEOLOGY−
WHAT IS THE WEATHER AT YOUR ALTITUDE AND FUEL REMAINING IN TIME.

4. Advise the pilot to maintain the same heading, verify the aircraft has ADF equipment, and determine the airspeed.

PHRASEOLOGY–
CONTINUE HEADING (degrees). WHAT TYPE OF NAVIGATIONAL EQUIPMENT DO YOU HAVE ON BOARD, AND WHAT IS YOUR AIRSPEED?

3–3–4. AUTOMATIC DIRECTION FINDER

a. Position fixing.

1. Advise the pilot to tune the automatic direction finder (ADF) receiver to the non−directional beacon (NDB). Provide the NDB name, identifier, and frequency.

PHRASEOLOGY–
TUNE YOUR A−D−F RECEIVER TO THE (name) RADIO BEACON, FREQUENCY (frequency), IDENTIFICATION (ident). CHECK VOLUME UP, AND IDENTIFY THE STATION. ADVISE WHEN YOU HAVE DONE THIS.

2. After acknowledgment has been received, advise the pilot to set the ADF function switch to the ADF position and report the reading.

PHRASEOLOGY–
IF YOU HAVE A ROTATING COMPASS CARD (ROSE) ON YOU'RE A−D−F INDICATOR, MAKE CERTAIN NORTH IS AT THE TOP OF THE DIAL. TURN THE FUNCTION SWITCH TO THE A−D−F POSITION. WHEN THE NEEDLE STABILIZES, ADVISE THE A−D−F NEEDLE READING.

NOTE–
Per the Instrument Flying Handbook, north may mean "north, N, zero (0) or 360."

3. Compute the magnetic bearing.

(a) Relative bearing (RB) + magnetic heading (MH) = magnetic bearing (MB)

(b) If the MB exceeds 360 degrees, subtract 360 to determine MB

EXAMPLE–
480 degrees − 360 degrees = 120 degrees MB.

4. Advise the pilot of direction from the NDB.

PHRASEOLOGY–
YOU ARE (direction) OF THE (name) RADIO BEACON.

b. Orientation.

1. Turn the aircraft inbound to the NDB being used. Provide the direction of the turn and the heading to be flown. Advise the pilot to report when established on that heading.

PHRASEOLOGY–
FOR A−D−F ORIENTATION, TURN LEFT/RIGHT HEADING (degrees). REPORT ESTABLISHED HEADING (degrees).

2. Notify the appropriate control facility. Provide all required information including the aircraft's position and heading.

3. Verify that the aircraft is established on a line of position to the NDB.

PHRASEOLOGY–
WHAT IS YOUR A−D−F NEEDLE READING?

4. Provide heading adjustments as needed for the aircraft to continue inbound to the NDB.

(a) If the pilot indicates an ADF reading other than 3−6−0, compute the new heading and advise the aircraft.

PHRASEOLOGY–
TURN LEFT/RIGHT HEADING (degrees). REPORT ESTABLISHED HEADING (degrees).

(b) After pilot reports established and needle is on 3−6−0, heading adjustments are not necessary.

PHRASEOLOGY–
CONTINUE HEADING (degrees).

c. Cross−fixing. After the aircraft is established inbound to the NDB, use the following procedures:

1. Advise the pilot to tune the ADF receiver to the NDB to be used for cross−fixing. Provide the NDB name, identifier, and frequency.

PHRASEOLOGY−
TUNE YOUR A−D−F RECEIVER TO THE (name) RADIO BEACON, FREQUENCY (frequency), IDENTIFICATION (identification). CHECK VOLUME UP, AND IDENTIFY THE STATION. ADVISE WHEN YOU HAVE DONE THIS.

2. After acknowledgment has been received, request ADF reading.

PHRASEOLOGY−
WHEN THE NEEDLE STABILIZES, ADVISE THE A−D−F NEEDLE READING.

3. Compute and plot the second line of position.

NOTE−
The intersection of the two lines of position is the aircraft's position at the time of the second ADF reading.

4. Advise the pilot of the aircraft's position and the safe altitude for orientation in that area.

PHRASEOLOGY−
YOU ARE (miles) (direction) OF THE (name) RADIO BEACON. THE SAFE ALTITUDE FOR ORIENTATIONS IN THAT AREA IS (feet).

5. Request pilot's intentions and provide assistance, as requested.

PHRASEOLOGY−
WHAT ARE YOUR INTENTIONS?

3−3−5. VOR CROSS−FIX

a. Position fixing.

1. If the pilot calls on a simplex frequency, such as 122.2, advise the pilot to tune the receiver to the VOR you have selected. Provide the VOR name, frequency, and communication procedures.

PHRASEOLOGY−
CONTINUE TRANSMITTING THIS FREQUENCY. TUNE YOUR V−O−R RECEIVER TO THE (name) V−O−R, FREQUENCY (frequency) IDENTIFICATION (identification). CHECK VOLUME UP, AND IDENTIFY THE STATION. ADVISE WHEN YOU HAVE DONE THIS.

NOTE−
If the pilot calls on duplex (122.1), use the VOR the pilot is tuned as the initial VOR.

2. Determine the aircraft's course selector reading.

PHRASEOLOGY−
ROTATE YOUR COURSE SELECTOR SLOWLY UNTIL THE LEFT/RIGHT NEEDLE CENTERS WITH A "TO" INDICATION. ADVISE YOUR COURSE SELECTOR READING.

3. Advise the pilot of the aircraft's position.

PHRASEOLOGY−
YOU ARE (direction) OF THE (name) V−O−R.

b. Orientation.

1. Turn the aircraft inbound to the VOR being used. Provide the direction of the turn and the heading to be flown. Advise the pilot to report when established on that heading.

PHRASEOLOGY−
FOR V−O−R ORIENTATION, TURN LEFT/RIGHT HEADING (degrees). REPORT ESTABLISHED HEADING (degrees).

2. Notify the appropriate control facility. Provide all required information including the aircraft's position and heading.

3. Verify that the aircraft is established on a line of position to the VOR.

PHRASEOLOGY−
WHAT IS THE POSITION OF YOUR LEFT/RIGHT NEEDLE?

4. Provide heading adjustments as needed for the aircraft to continue inbound to the VOR.

(a) When the pilot indicates the left/right needle is not centered, advise the pilot to recenter needle with a "to" indication and report the course selector reading.

PHRASEOLOGY−
Pilot response indicates needle not centered:

ROTATE YOUR COURSE SELECTOR SLOWLY UNTIL THE LEFT/RIGHT NEEDLE CENTERS WITH A "TO" INDICATION. ADVISE YOUR COURSE SELECTOR READING. (If appropriate) TURN LEFT/RIGHT HEADING (degrees). REPORT ESTABLISHED (degrees).

(b) After the aircraft is established on the inbound radial, advise the aircraft to continue on the inbound heading.

PHRASEOLOGY−
CONTINUE HEADING (degrees).

5. Plot line of position.

c. Cross−fixing. After the aircraft is established inbound to the VOR, use the following procedures:

1. Advise the pilot to tune the receiver to the VOR you have selected for cross−fixing. Provide VOR name, frequency, and lost communications procedures.

PHRASEOLOGY−
CONTINUE TRANSMITTING THIS FREQUENCY. TUNE YOUR V−O−R RECEIVER TO THE (name) V−O−R, FREQUENCY (frequency), IDENTIFICATION (identification). CHECK VOLUME UP. IF COMMUNICATION IS NOT ESTABLISHED IMMEDIATELY, RETURN TO THIS FREQUENCY.

2. Using only the voice feature of the second VOR, establish positive communication with the aircraft.

PHRASEOLOGY−
(Name) RADIO TRANSMITTING ON THE (name) V−O−R. HOW DO YOU HEAR? OVER.

NOTE−
Transmit only on the frequency of the VOR being used for cross−fixing, if available.

3. After communication has been reestablished, advise the pilot to recenter the VOR left/right needle and advise the reading.

PHRASEOLOGY−
ROTATE YOUR COURSE SELECTOR SLOWLY UNTIL THE LEFT/RIGHT NEEDLE CENTERS WITH A "TO" INDICATION. ADVISE YOUR COURSE SELECTOR READING.

4. If the pilot is transmitting on duplex (122.1) and the cross fix VOR has no voice capability, provide the following instructions.

PHRASEOLOGY−
CONTINUE TRANSMITTING THIS FREQUENCY. TUNE YOUR VOR RECEIVER TO THE (name) VOR, FREQUENCY (frequency), IDENTIFICATION (ident). CHECK VOLUME UP AND IDENTIFY THE STATION. ROTATE YOUR COURSE SELECTOR SLOWLY UNTIL THE LEFT/RIGHT NEEDLE CENTERS WITH A "TO" INDICATION. ADVISE YOUR COURSE SELECTOR READING (PAUSE).

RETUNE YOUR VOR RECEIVER TO THE (name) VOR, FREQUENCY (frequency), IDENTIFICATION (identification). SAY YOUR AIRCRAFT IDENTIFICATION AND THE (name) VOR COURSE SELECTOR READING.

5. Advise the pilot to continue the inbound heading.

PHRASEOLOGY−
CONTINUE HEADING (degrees).

6. Plot the new line of position from the second VOR, advise the pilot of the aircraft's position, and the safe altitude for orientation in that area.

NOTE–
The intersection of the two lines of position is the aircraft's position at the time of the second VOR reading.

PHRASEOLOGY–
YOU ARE (miles) (direction) OF THE (name) V−O−R. THE SAFE ALTITUDE FOR ORIENTATIONS IN THAT AREA IS (feet).

7. Request pilot's intentions and provide assistance, as requested.

PHRASEOLOGY–
WHAT ARE YOUR INTENTIONS?

3−3−6. GLOBAL POSITIONING SYSTEM (GPS)

Use the following procedures for global positioning system (GPS) orientation:

a. Advise pilot to turn on the GPS or if GPS is turned on, advise pilot to turn it off and back on.

b. Advise pilot to report when GPS is initialized.

NOTE–
This procedure ensures the GPS unit is not in simulator mode and does not have data displayed that may be misinterpreted.

c. Ask pilot for position information.

1. Latitude and longitude.

2. Fix radial distance from NAVAID, airport, or fix.

d. Plot the position of aircraft.

NOTE–
The position is the aircraft's position at the time of the GPS reading.

e. Advise the pilot of the aircraft's position and the safe altitude for orientation in that area.

PHRASEOLOGY–
YOU ARE (miles) (direction) OF THE (name) NAVAID/AIRPORT. THE SAFE ALTITUDE FOR ORIENTATIONS IN THAT AREA IS (feet).

f. Notify the appropriate control facility. Provide all required information including the aircraft's position and heading.

g. Request pilot's intentions and provide assistance, as requested.

PHRASEOLOGY–
WHAT ARE YOUR INTENTIONS?

3−3−7. GUIDANCE TO AIRPORT

After establishing the aircraft's position and if the pilot requests guidance to the airport:

a. Plot the course to the airport.

b. Provide the course guidance information to the pilot.

1. Advise the pilot of the direction of the turn and the heading to the airport.

PHRASEOLOGY–
FOR A HEADING TO THE (name) AIRPORT, TURN LEFT/RIGHT HEADING (degrees). REPORT ESTABLISHED HEADING (degrees).

2. After the pilot reports established on the heading to the airport, advise the pilot of the position in relation to the airport.

PHRASEOLOGY–
YOU ARE (miles) (direction) OF THE (name) AIRPORT. CONTINUE HEADING (degrees).

3. Continue to provide assistance in the form of pilotage and airport information as necessary.

PHRASEOLOGY−
DO YOU SEE ANY PROMINENT LANDMARKS?

ARE YOU FAMILIAR WITH THE (name) AIRPORT?

(Name) AIRPORT FIELD ELEVATION (feet). IT HAS (number and surface type) RUNWAYS. THE RUNWAY/S RUN (direction). THE AIRPORT IS LOCATED (direction/distance) FROM (landmark visible to the aircraft).

4. Advise the pilot to report the landing airport in sight.

PHRASEOLOGY−
REPORT AIRPORT IN SIGHT.

5. Determine when the pilot no longer needs assistance.

PHRASEOLOGY−
DO YOU REQUIRE FURTHER ASSISTANCE?

6. When the pilot indicates assistance is no longer required, terminate the service. Provide the common traffic advisory frequency (CTAF) frequency, if appropriate, and the local altimeter setting.

PHRASEOLOGY−
(VOR/ADF) ORIENTATION SERVICE TERMINATED. COMMON TRAFFIC ADVISORY FREQUENCY (frequency). ALTIMETER (setting).

NOTE−
CTAF is defined as a UNICOM, multicom, FSS, or ATCT frequency.

7. Notify appropriate control facility of the aircraft's position, termination of services, and the pilot's intentions.

Section 4. Overdue Aircraft

3−4−1. RESPONSIBILITY

a. The departure tie−in facility/sector is responsible for search and rescue (SAR) action until the destination tie−in facility/sector acknowledges receipt of the flight notification message. SAR responsibility is then transferred to the destination tie−in facility/sector.

NOTE−
Tie-in facilities may include an FSS, military BASOPS, foreign facilities, etc.

b. The National SAR Plan assigns search and rescue responsibilities as follows:

1. To the military agencies for conducting physical SAR operations.

2. To the FAA for:

(a) Providing emergency service to aircraft in distress.

(b) Assuring that SAR procedures will be initiated if an aircraft becomes overdue or unreported. This is accomplished through the ATC system for IFR aircraft and the flight plan program and/or reports of overdue aircraft received at air traffic facilities for VFR aircraft.

(c) Attempting to locate overdue or unreported aircraft by information request (INREQ) and alert notice (ALNOT) communications search.

(d) Cooperating in the physical search by making all possible facilities available for use by the searching agencies.

NOTE−
The National SAR Plan is outlined in the AIM.

c. FSSs serve as the central point for collecting and disseminating information on overdue or missing aircraft which are not on an IFR flight plan.

d. ARTCCs serve as the central points for collecting information, coordinating with SAR, and conducting a communications search by distributing any necessary ALNOTs concerning:

1. Overdue or missing IFR aircraft.

2. Aircraft in an emergency situation occurring in their respective areas.

3. Aircraft on a combined VFR/IFR or an air−filed IFR flight plan, and 30 minutes have passed since the pilot requested IFR clearance, and neither communications nor radar contact can be established.

4. Overdue or missing aircraft which have been authorized to operate in accordance with a SVFR clearance.

e. The ARTCC serves as the contact point for collecting information and coordinating with RCC on all ELT signals.

3−4−2. OVERDUE AIRCRAFT ON A FLIGHT PLAN

Consider an aircraft on a VFR or defense VFR (DVFR) flight plan overdue:

a. When it fails to arrive 30 minutes after its ETA and communications or location cannot be established.

b. When notified by a commercially available tracking service, begin SAR activities most appropriate for the circumstances (for example, a communications search followed by an ALNOT).

c. When notified by an enhanced SAR service such as the Enhanced Special Reporting System (eSRS) or the Surveillance Enhanced SAR (SE SAR) service.

NOTE–
1. *The eSRS is only available to pilots using the Alaska FSS system. The SE SAR service is only available to pilots using the FAA−contracted service provider system.*

2. *Locally approved procedures prescribe each service.*

3. *Flight Service personnel must evaluate new automated SAR capabilities independently and implementation will depend on Flight Service Directorate approval.*

3−4−3. OVERDUE AIRCRAFT NOT ON A FLIGHT PLAN

Consider an aircraft not on a flight plan as overdue:

a. At the actual time a reliable source reports it to be at least one hour late at destination. Based on this overdue time, initiate a communications search and proceed directly to the ALNOT phase. When such a report is received, verify (if possible) that the aircraft actually departed and that the request is for a missing aircraft rather than a person. Refer missing person reports to the appropriate authorities.

b. If you have reason to believe that an aircraft is overdue prior to one hour after its ETA, take the appropriate action immediately.

REFERENCE–
FAA Order JO 7110.10, Para 3−4−11, ALNOT.

3−4−4. COMMUNICATIONS SEARCH

a. As soon as a VFR/DVFR aircraft (military or civilian) becomes overdue, the destination tie−in facility/sector (including intermediate destination tie−in facilities for military aircraft) must initiate a communications search to locate the aircraft by checking the following:

1. Destination airport.

2. Flight plan phone number, if available.

3. BASOPS, if applicable.

4. Customs, if applicable.

5. ATC facilities as applicable.

b. If the aircraft has not been located, check the following:

1. Departure airport.

2. All airports adjacent to the destination that could accommodate the aircraft.

3. Appropriate ARTCC sectors.

c. When notified by an enhanced SAR service such as eSRS or the SE SAR service (or any future technologies).

NOTE–
1. *Flight Service personnel must evaluate new SAR procedures and/or capabilities independently for safety and policy compliance and application will depend on Flight Service Directorate approval.*

2. *The eSRS is only available to pilots using the Alaska FSS system. The SE SAR service is only available to pilots using the FAA−contracted service provider system.*

3. *Locally approved procedures prescribe each service.*

3−4−5. QALQ

If the communications search does not locate the aircraft, and the flight plan is not held by the destination station, transmit a QALQ to the facility/sector that holds the flight plan. Possible flight plan originators:

KxxxYFYX	FLIGHT SERVICE STATION/SECTOR
KxxxYXYX	MILITARY BASOPS
KAISXCLX	AISR

NOTE−
QALQ is used to solicit information that is not accessible. For operational systems using a common data base, message transmissions may not be necessary.

a. The QALQ message text must begin with the contraction QALQ followed by the aircraft identification.

EXAMPLE−
QALQ N12345

b. If the specialist determines that the communications search cannot be completed prior to the INREQ transmission time, the specialist must transmit the QALQ in time to receive the information for the INREQ message. The specialist must continue the communications search without reference to time until such a time that the aircraft is located, the communications search is complete, or the search is suspended.

c. In the case of a U.S. registered aircraft, or any aircraft known to be piloted by or transporting U.S. citizens and en route within a foreign country or between two foreign countries, if an overdue report is received either from someone directly concerned or from aviation authorities of a foreign country, notify the WOC immediately via Service B message addressed to KRWAYAYX.

d. Automated systems will accept properly formatted QALQs, INREQs, ALNOTs, INCERFAs, ALERFAs, and DETRESFAs and place them on the SAR list. A SAR alert may be generated at designated workstations. Specialists must delete SAR messages from the SAR list when the SAR is canceled.

NOTE−
See Chapter 3, Section 5, for International SAR procedures.

3−4−6. ACTION BY DEPARTURE STATION ON RECEIPT OF QALQ

Upon receipt of the QALQ message, the departure tie−in facility must check for any information about the aircraft, and take the following actions:

a. If the aircraft is located, notify the destination facility. This may be delivered via Service B message or recorded communications.

b. If unable to obtain additional information, transmit a message to the destination tie−in facility containing all information not previously sent. Include any verbal or written remarks which could be pertinent to the search.

NOTE−
For operational systems using a common database, message transmissions may not be necessary.

EXAMPLE−
QALQ N4367V
[flight plan information]
[additional pertinent information]

3−4−7. CANCELLATION OF THE QALQ

If the aircraft is located by the destination facility after the QALQ is sent, transmit a cancellation message addressed to all recipients of the QALQ.

EXAMPLE−
QALQ N4367V CNLD

3−4−8. INREQ

If the reply to the QALQ is negative or the aircraft has not been located within 30 minutes after it becomes overdue, whichever occurs first:

a. The destination tie−in facility/sector must transmit a numbered INREQ message addressed to:

1. Flight plan originator (if other than AISR).

2. En route FSS as applicable.

3. KSARYCYX (includes RCC and AISR).

4. En route ARTCCs as applicable.

5. BASOPS if destination or departure tie−in facility.

6. Other addresses the specialist deems beneficial to the search.

b. Include the flight plan and any other pertinent information in the INREQ message which could assist in search activities. Retrieve data from the history files, format the message, and transmit. Provide the aircraft's last known position as the final item of the message. The message text must begin with the contraction INREQ, followed by the aircraft identification.

EXAMPLE−
DCA001 (appropriate three−character identifiers)
INREQ N12345
[flight plan information]
[additional pertinent information]

c. If the departure airport, route of flight, destination airport or alternate airports are within 50 miles of the Great Lakes, notify Cleveland RCC via recorded telecommunications line.

d. If the flight is within the Honolulu sector, notify Honolulu Joint RCC via recorded telecommunications line.

e. RCC does not have transmit capability. Acknowledgement is not required for messages to RCC.

f. If additional information is received in INREQ reply messages, transmit the information, as necessary, to all original addressees.

3−4−9. ACTION UPON RECEIPT OF INREQ

Stations receiving an INREQ must take the following action:

a. Search facility records for information regarding the aircraft. Expand the communications search to include all flight plan area airports along the proposed route of flight that could accommodate the aircraft. Notify appropriate ATC facilities. Reply to the INREQ within one hour of receipt with flight plan and other pertinent information. If unable to complete the communications search within one hour, forward a status report followed by a final report when the search is complete.

EXAMPLE−
HNL001 (appropriate three−character identifiers)
INREQ N1234A [status report]
HNL001 (appropriate three−character identifiers)
INREQ N1234A [final report]

NOTE−
Upon receipt of INREQs and ALNOTs, ATCTs and ARTCCs are required to check facility records, report findings to the FSS that alerted them within one hour, and retain in an active status until canceled.

REFERENCE−
FAA Order JO 7110.10, Para 3−4−11, ALNOT.

b. If the INREQ indicates that the departure airport, route of flight, destination airport or alternate airports are within 50 miles of the Great Lakes, notify Cleveland RCC via recorded telecommunications line.

c. For facilities that have any portion of their incoming calls and/or Service B diverted to another facility, notify that facility of the INREQ. The facility receiving diverted calls or Service B traffic must check its records and advise of any information or contact with the aircraft.

3−4−10. CANCELLATION OF INREQ

The INREQ originator must transmit a cancellation message containing the location of the aircraft to all INREQ addressees if the aircraft is located. Notify associated ATC facilities.

EXAMPLE−
LOU001 (appropriate three−character identifiers)
INREQ N1234A CNLD LCTD BWG

3−4−11. ALNOT

a. If the replies to the INREQ are negative, or if the aircraft is not located within one hour after transmission of the INREQ, whichever occurs first, the destination station must transmit an ALNOT addressed to:

1. Flight plan originator (if other than AISR).

2. KSARYCYX (includes RCC and AISR).

3. KxxxYAYX (appropriate ROC).

4. Add ARTCCs 50 NM either side of route.

5. BASOPS if destination or departure tie−in facility, or the home base of the aircraft.

6. Other addresses deemed beneficial to the search by the specialist.

b. Expand the communications search area to that area extending 50 miles on either side of the proposed route of flight from the last reported position to the destination. The search area may be expanded to the maximum range of the aircraft at the request of RCC or by the destination station.

c. If the departure airport, route of flight, destination airport, or alternate airports are within 50 miles of the Great Lakes, notify Cleveland RCC via recorded telecommunications line.

d. Include all information from the INREQ, plus any additional information received that could assist in search activities. Provide the aircraft's last known position as the final item in the message. The message text must begin with the contraction ALNOT, followed by the aircraft identification.

EXAMPLE−
ALNOT N12345
[flight plan information]
[additional pertinent information]

e. Ten minutes after the ALNOT is issued, call RCC to ensure delivery of the ALNOT and to answer any inquiries.

NOTE−
1. *Alaska: Joint Base Elmendorf Richardson, RCC at (907) 551−7230, (800) 420−7230, or DSN (317) 551−7230.*

2. *RCC (Tyndall Air Force Base) phone numbers are: (800) 851−3051 or (850) 283−5955.*

f. If additional pertinent information is received, transmit the information, as necessary, to all original addressees.

3−4−12. ACTION UPON RECEIPT OF ALNOT

Upon receipt of an ALNOT, including those received from other ATC facilities, each station whose flight plan area extends into the ALNOT search area must:

a. Immediately conduct an expanded communications search of those airports which fall within the ALNOT search area that could accommodate the aircraft and that were not checked during the INREQ search. Notify the appropriate ATC facilities. Request the appropriate law enforcement agency to check airports which cannot be contacted otherwise.

b. For ARTCC issued ALNOTS, coordinate with the issuing facility to determine the extent of communications already completed prior to contacting airports and other ATC facilities whose flight plan area extends into the ALNOT search area.

c. Within one hour after receipt of the ALNOT, notify the originator of the results or status of the communications search. Transmit pertinent information, such as aircraft location or position report, to the destination station.

EXAMPLE−
ALNOT N1234A [status report]
ALNOT N1234A [final report]

d. Broadcast the ALNOT on all available frequencies within the ALNOT search area.

e. Request search assistance from aircraft traversing the search area.

3−4−13. REPORTING ALNOT STATUS TO RCC

If the expanded communications search fails to locate the aircraft, or if one hour has elapsed since ALNOT transmission, whichever occurs first, the destination station must call RCC with a status update. When appropriate, update Cleveland RCC. Provide RCC with all pertinent information about the overdue aircraft not already provided in the ALNOT which may include:

a. Agency and the person calling.

b. Details of the flight plan. If the aircraft was not on a flight plan, include all the facts about the source of the report.

c. Time the last radio transmission was received, by whom, and the frequency used.

d. Last position report.

e. Whether an ELT signal was heard or reported along the route of flight.

f. Action taken and the proposed action by the reporting FSS.

g. Furnish positions of other aircraft known to be along or near the route of flight of the missing aircraft.

3−4−14. CANCELLATION OF ALNOT

The ALNOT remains current until the aircraft is located and/or the search is suspended by RCC. In either case, the ALNOT originator must transmit a cancellation message with the location of the aircraft, if known, addressed to all recipients of the original ALNOT. Each facility must notify all previously alerted facilities and agencies of the cancellation.

EXAMPLE−
ALNOT N12345 CNLD ACFT LCTD JAX
ALNOT N1513B CNLD SEARCH SUSPENDED

Section 5. International SAR

3–5–1. ALERTING SERVICE

a. FSS must provide alerting service:

1. For all aircraft provided with ATC service.

2. To all other aircraft having filed a flight plan or otherwise known to an air navigation service provider, when practicable.

3. To any aircraft known or believed to be the subject of unlawful interference.

b. Additional information related to ICAO SAR procedures can be found in ICAO ANNEX 11, Chapter 5, Alerting Service.

c. Apply domestic SAR procedures for the U.S. portion of the flight.

3–5–2. ALERTING PHASES

a. ATS units must notify RCC immediately when an aircraft is considered to be in a state of emergency in accordance with the following:

1. Uncertainty phase when:

(a) No communication has been received from an aircraft within a period of 30 minutes after the time a communication should have been received, or from the time an unsuccessful attempt to establish communication with such aircraft was first made, whichever is the earlier.

(b) An aircraft fails to arrive within 30 minutes of the estimated time of arrival last notified to or estimated by air traffic services units, whichever is later, except when no doubt exists as to the safety of the aircraft and its occupants.

2. Alert phase when:

(a) Following the uncertainty phase, subsequent attempts to establish communication with the aircraft or inquiries to other relevant sources have failed to reveal any news of the aircraft.

(b) An aircraft has been cleared to land and fails to land within five minutes of the estimated time of landing and communication has not been reestablished with the aircraft.

(c) Information has been received which indicates that the operating efficiency of the aircraft has been impaired but not to the extent that a forced landing is likely.

(d) An aircraft is known or believed to be the subject of unlawful interference.

3. Distress phase when:

(a) Following the alert phase further unsuccessful attempts to establish communication with the aircraft and more widespread unsuccessful inquiries point to the probability that the aircraft is in distress.

(b) The fuel on board is considered to be exhausted or thought to be insufficient to enable the aircraft to reach safety.

(c) Information is received which indicates that the operating efficiency of the aircraft has been impaired to the extent that a forced landing is likely.

(d) Information is received and it is reasonably certain that the aircraft is about to make or has made a forced landing.

b. In addition to the initial notification, RCC must, without delay, be furnished with:

1. Any useful additional information, especially on the development of the state of emergency through subsequent phases.

2. Information that the emergency situation no longer exists.

3−5−3. ALERTING MESSAGE CONTENTS

a. The notification must contain as much of the following information as is available in the order listed:

1. INCERFA, ALERFA, DETRESFA, as appropriate to the phase of the emergency.

2. Agency and person calling.

3. Nature of the emergency.

4. Significant information from the flight plan.

5. Unit which made last contact, time, and frequency used.

6. Last position report and how determined.

7. Color and distinctive marks of aircraft.

8. Any action taken by reporting office.

9. Other pertinent remarks.

EXAMPLE−
(INCERFA)
SS MMMXYAYX
DTG KSANYFYX
(ALR−INCERFA/KSAN/OVERDUE
−N1234S−VG
−C172
−KRNO2000
−MMLP0130
−REQ ACK OR ARR ACFT OVERDUE YOUR STN)

(ALERFA)
SS MMMXYAYX
TEXT:(ALR−ALERFA/KSAN/OVERDUE)
(text remains same except for remarks information).

(DETRESFA)
SS MMMXYAYX
TEXT:(ALR−DETRESFA/KSAN/OVERDUE
(text remains same except for remarks information).

b. The cancellation of action initiated by RCC is the responsibility of that ARTCC.

EXAMPLE−
(CANCELLATION)
SS MMMXYAYX
020618 KMIAYFYX
(ALR−ALERFA/KMIAYFYX/CNLD N1234 LOCATED)

NOTE−
Transmit cancellation messages for INCERFA and DETRESFA using same format as above.

c. For supplemental flight plan information, transmit a request supplementary flight plan (RQS) message, which is used in the transmission of the INCERFA.

EXAMPLE–
FF SVZMZRZX
231247 KMIAYFYX
(RQS–N1234–SVMI–KMIA)

3–5–4. CANADIAN TRANSBORDER FLIGHTS

a. Assume SAR responsibility on transborder aircraft upon acknowledgment of the inbound flight notification message.

b. When SAR action is initiated, the destination and departure facilities are responsible for all communications search actions within their respective countries and for alerting their respective RCC.

c. For inbounds from Canada, apply standard U.S. SAR procedures contained in this chapter for the U.S. portion of the route. Include the Canadian departure facility as an addressee on all SAR messages since that facility is responsible for initiating SAR action for the Canadian portion of the route of flight.

d. Canadian communications search procedures and action times are similar to U.S. procedures. They will address all SAR messages to the U.S. departure FSS, which is then responsible for initiating SAR action for the U.S. portion of the route of flight.

e. Upon receipt of a Canadian QALQ, the departure FSS must take the following actions:

1. Check history files for any information about the aircraft.

2. If unable to obtain additional information, or within 15 minutes after receipt of the QALQ, transmit a message to the destination facility containing all flight plan information not previously sent.

f. Upon receipt of a Canadian INREQ, the departure FSS must transmit an INREQ for the U.S. portion of the route of flight and reply to Canada within one hour in accordance with standard INREQ procedures.

g. Upon receipt of a Canadian ALNOT, the departure FSS must transmit an ALNOT for the U.S. portion of the route and reply to Canada within one hour in accordance with standard ALNOT procedures.

NOTE–
Some U.S. airspace is controlled by Canadian ATC facilities, which may also be addressed when appropriate.

3–5–5. MEXICAN TRANSBORDER FLIGHTS

a. For inbounds from Mexico, the departure station in Mexico is responsible for initiating SAR action until an acknowledgment of the flight notification message is received.

NOTE–
When received in the proper format, VFR flight notification messages are automatically acknowledged and suspended by the operational system. See paragraph 6–5–2, Inbounds from Mexico, for additional information on flight notification messages.

b. Once SAR is initiated by Mexico, provide SAR service in accordance with standard format/time increments listed in Section 5, International SAR, and Section 4, Overdue Aircraft, of this chapter.

Chapter 4. In-Flight Services

Section 1. General

4−1−1. DESCRIPTION

In−flight services are those provided to or affecting aircraft in−flight or otherwise operating on the airport surface. This includes services to airborne aircraft, such as:

a. ATC clearance relay.

b. Voice communications for designated portions of ARTCC airspace.

c. Flight progress reports.

d. Advisories or requests.

e. Issuance of military flight advisory messages.

f. NOTAM delivery.

g. SAR communications searches.

h. Flight plan handling.

i. Transcribed or live broadcasts.

j. Weather observations.

k. PIREP solicitation and dissemination.

l. Pilot briefings.

4−1−2. PRE-DUTY REQUIREMENTS

a. Familiarization. Prior to assuming in−flight duties, specialists must familiarize themselves with meteorological and aeronautical conditions in accordance with appropriate facility directives. After assuming duties, specialists must continue to review data during the watch to maintain comprehensive knowledge of conditions affecting operations. This includes:

1. General locations of weather−causing systems and general weather conditions.

2. Detailed information of current and forecast weather conditions for the assigned FPA or AOR.

3. Aeronautical information; particularly, NOTAMs, SUAs, TFRs, and air traffic delays.

b. Transfer of position responsibility. Specialists must accomplish the transfer of position responsibility in accordance with paragraph 2−1−3, Transfer of Position Responsibility, of this order.

4−1−3. OPERATIONAL PRIORITY

Provide in-flight services in accordance with the procedures in this chapter to aircraft on a "first come, first served" basis, as circumstances permit.

a. Aircraft in distress have priority over all other aircraft.

NOTE−
Refer to paragraph 3−1−3 for information on providing assistance for emergency services.

b. Treat air ambulance flights as follows:

1. Provide priority handling to civilian 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 civilian registration letters/numbers. Specialists must use good judgment 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 7110.10, Para 2−5−3, 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) 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.

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 MEDEVAC, AIR EVAC, or HOSP pilot, provide additional assistance (for example, landline notifications) to expedite ground handling of patients, vital organs, or urgently needed medical materials.

c. Provide maximum assistance to aircraft performing a SAR mission.

d. Provide special handling to expedite, as required, to aircraft engaged in flight inspections, also known as Flight Check. Unless otherwise agreed to, maintain direct contact with the pilot and provide information regarding known traffic in the area and request the pilot's intentions.

NOTE−
1. *Many flight inspections are accomplished using automatic recording equipment. An uninterrupted flight is necessary for successful completion of the mission. The workload for the limited number of aircraft engaged in these activities requires strict adherence to a schedule.*

2. *Flight inspection operations that require special participation of ground personnel, specific communications, or radar operation capabilities are considered to require special handling. These flights are coordinated with appropriate facilities before departure.*

4−1−4. IN-FLIGHT WEATHER BRIEFINGS

a. Upon request, provide en route aircraft with pertinent weather information applicable to the phase of flight, altitude, and/or route.

b. Provide in−flight weather briefings in accordance with the procedures outlined in Chapter 5, Pre−Flight Services.

c. When conditions dictate, provide information for alternate routes and/or altitudes to assist the pilot in the avoidance of hazardous flight conditions.

4−1−5. AIRCRAFT-REPORTED NAVIGATIONAL EQUIPMENT MALFUNCTIONS

a. Aircraft−reported NAVAID malfunctions are subject to varying circumstances. When an aircraft reports a ground−based NAVAID malfunction, take the following action:

1. Request a report from a second aircraft.

2. If the second aircraft reports normal operations, if able, inform the first aircraft. Record the incident on FAA Form 7230−4, Daily Record of Facility Operation.

3. If the second aircraft confirms the malfunction:

(a) Notify the appropriate IFR control facility or sector.

(b) Notify Tech Ops personnel.

(c) Take NOTAM action when requested by Tech Ops personnel.

(d) Record the incident on FAA Form 7230−4.

4. In the absence of a second aircraft report:

(a) Notify Tech Ops and advise what time the initial aircraft reported the failure and when a second aircraft report might be obtained.

(b) Record the incident on FAA Form 7230−4.

b. When an aircraft reports GPS/GNSS anomaly:

1. Request the following information:

(a) Aircraft call sign and type of aircraft.

(b) Date and time of the occurrence.

(c) Location of anomaly.

(d) Altitude.

2. Record the incident on FAA Form 7230−4.

3. Forward this information to the traffic management unit and Tech Ops personnel.

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

1. Determine if the pilot has lost all WAAS service.

EXAMPLE−
"Are you receiving any WAAS service?"

2. If the pilot reports receipt of any WAAS service, acknowledge the report, and continue normal operations.

3. If the pilot reports loss of all WAAS service, report as a GPS anomaly using procedures in subparagraph 4−1−5b.

d. When an aircraft reports an ADS−B services malfunction (for example, ADS−B, TIS−B, FIS−B, or ADS−R):

1. Request the following information:

(a) Aircraft call sign and type of aircraft.

(b) Date and time of observation.

(c) Location and altitude of anomaly.

(d) Condition observed (or anomaly).

(e) Type and software version of avionics system.

2. Forward this information to an OCC or SOC as appropriate.

3. Record the incident on FAA Form 7230−4.

4−1−6. RECORDING IN-FLIGHT INFORMATION

a. Record all actions taken in the provision of in−flight services.

1. Aircraft contacts.

(a) When using flight progress strips, if the station has the aircraft's flight plan, enter "FP" in item 14 on the strip to show the flight plan is on file at the facility.

(b) If there is no flight plan on file for the aircraft, specialists must obtain the following from the aircraft:

(1) Aircraft identification.

(2) Type of flight.

(3) Time of contact.

(4) Other operationally significant items.

(c) If the in−flight position is recorded, you may limit entries in the aircraft contact portion of the strip to those necessary for your use.

(d) The following should be logged using the symbols in TBL 4−1−1 and TBL 4−1−2:

(1) Type of briefing – standard, abbreviated, or outlook.

(2) Type of flight – IFR, VFR, or DVFR.

(3) Category of flight – air carrier, air taxi, military, or general aviation.

(4) Aircraft identification.

(5) Type of service – airport advisory, clearance request.

(6) Remarks. Operating position if not automatically logged by the operational system.

TBL 4−1−1

Clearance Abbreviations

Abbreviation	Meaning
A	Cleared to airport (point of intended landing)
B	ARTCC 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
L	Cleared to land
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

TBL 4−1−2
Miscellaneous Abbreviation

Abbreviation	Meaning
BC	Back course approach
CT	Contact approach
FA	Final approach
GPS	GPS approach
I	Initial approach
ILS	ILS approach
MA	Missed approach
NDB	Non−directional radio beacon approach
OTP	VFR conditions−on−top
PA	Precision approach
PT	Procedure turn
RH	Runway heading
RP	Report immediately upon passing (fix/altitude)
RX	Report crossing
SA	Surveillance approach
SI	Straight−in approach
TA	TACAN approach
TL	Turn left
TR	Turn right
VA	Visual approach
VR	VOR approach

2. Flight plans and related messages (for example, modifications, cancellations, activations, and closures). When closing an active VFR flight plan, obtain departure point and destination, if not already known.

NOTE−
1. *A closed VFR flight plan is one that has been activated and is then removed from an inbound list.*
2. *A canceled VFR flight plan is one that is removed from a proposed list and has not been activated.*
3. *FSS operational systems contain an electronic equivalent of authorized FAA flight plan forms.*

3. ATC clearances.

4. Pilot briefings.

5. Weather and flight data messages.

6. Other operationally significant actions.

b. In−flight contacts may be logged in the operational system, the multi−touch electronic flight strip (EFS) system, or other facility approved alternate forms.

c. Locally approved procedures may be used to manually record data during heavy traffic periods or system outages and should be logged in the operational system as soon as practicable.

d. Use control/clearance symbols, abbreviations, location identifiers, and contractions for recording position reports, traffic clearances, and other data.

e. When recording data, you may use:

1. Plain language to supplement data when it will aid in understanding the recorded information.

2. Locally approved contractions and identifiers for frequently used terms and local fixes not listed in either FAA Order JO 7340.2, Contractions, or FAA Order JO 7350.9, Location Identifiers. Use only within your facility, not on data or interphone circuits. All locally approved contractions and identifiers must be available in facility files for record and reference purposes.

f. When recording data manually, use the standard hand−printed characters shown in TBL 4−1−3 to prevent misinterpretation.

1. To correct or update data, draw a horizontal line through it and write the correct information adjacent to it.

2. Do not erase any item.

TBL 4−1−3
Hand-Printed Character Chart

Typed	Hand-Printed	Typed	Hand-Printed
A	A	S	S̲
B	B	T	T
C	C	U	U
D	D	V	V
E	E	W	W
F	F	X	X
G	G	Y	Y
H	H	Z	Ƶ
I	I	1	1
J	J	2	2
K	K	3	3
L	L	4	4
M	M	5	5
N	N	6	6
O	O	7	7
P	P	8	8
Q	Q	9	9
R	R	0	Ø

NOTE−
A slant line crossing through the numeral zero and an underline of the letter "S" on handwritten portions of flight progress strips are required only when there is reason to believe the lack of these markings could lead to a misunderstanding. A slant line through the numeral zero is required on all weather data.

4−1−7. FLIGHT PROGRESS STRIPS AND ENTRY DATA

a. When officially used to record in−flight data, use the multi−touch EFS to record:

1. Aircraft contacts.

2. ATC clearances.

3. Pilot briefings on airborne aircraft.

4. Other operationally significant items.

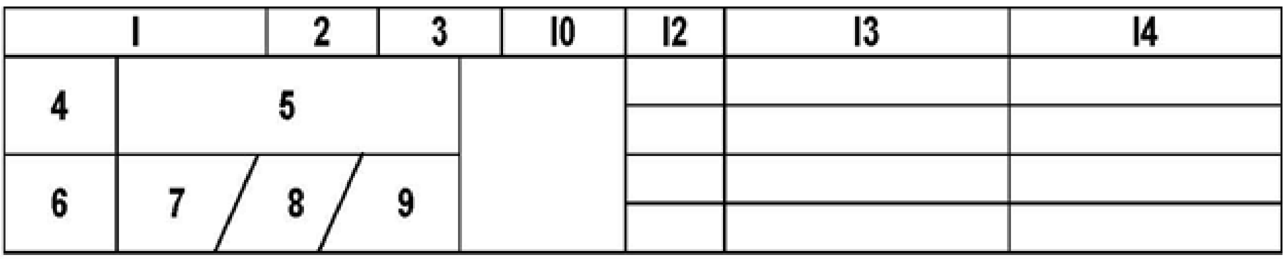
b. Locally approved procedures may be used to manually record flight progress during heavy traffic periods or system outages and should be logged in the multi−touch EFS as soon as practicable.

c. Use a flight progress strip for each aircraft and record all contacts with that aircraft on the same strip. If supplemental strips are needed for additional writing space, keep the original and supplemental strips together.

NOTE−
Multiple flights by the same aircraft may be recorded on a single strip when situational awareness and strip bay efficiency are improved.

d. Flight progress strip (see FIG 4−1−1).

FIG 4−1−1
Flight Progress Strip



e. Flight progress strip entry examples (see FIG 4−1−2 and FIG 4−1−3).

FIG 4−1−2
Strip Entry 1

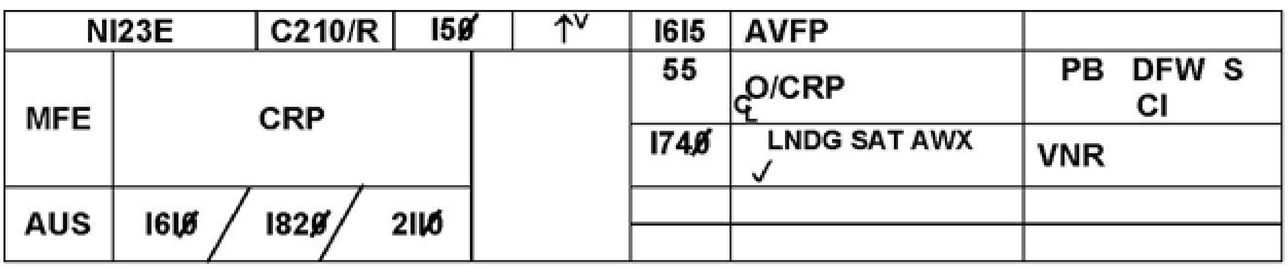
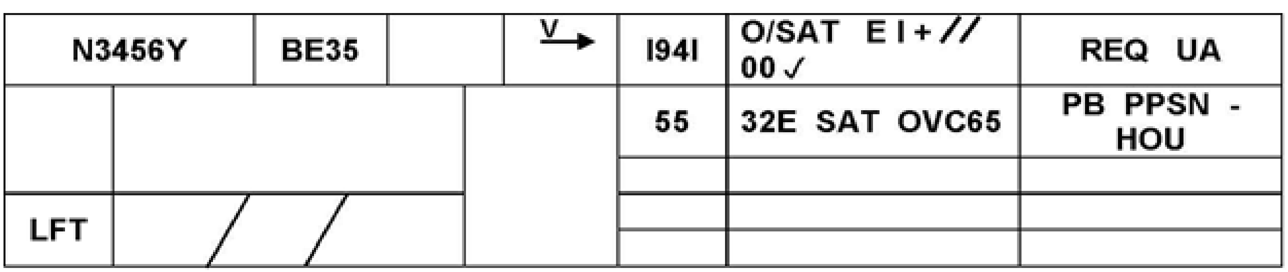


FIG 4−1−3
Strip Entry 2



f. Flight progress strip item and information (see TBL 4−1−4).

TBL 4−1−4

Item and Information

Item	Information
1	Aircraft identification. To identify IFR aircraft piloted by solo U.S. Air Force undergraduate pilot, the letter ‘Z’ will be added to aircraft ID on the flight progress strip. Do not use the suffix in ground−to−air communications.
2	Type of aircraft/special equipment.
3	True airspeed (TAS) and altitude (IFR). Altitude (VFR/DVFR, if known).
4	Departure point.
5	Route of flight.
6	Destination.
7	Actual departure time, or time VFR flight plan activated.
8	ETA at destination.
9	Estimated time of fuel exhaustion.
10	Type of flight.
11	Action time (for example, overdue time, fuel exhaustion time, LR contact time).
12	Time of contact with pilot.
13	Information received from pilot/another facility.
14	Data issued to the aircraft.

g. Flight progress strip abbreviations (see TBL 4−1−5).

TBL 4−1−5
Flight Progress Strip Abbreviations

Abbreviation	Meaning
Õ	Over flight
↓	Inbound flight
↑	Outbound flight
A	AIRMET or G−AIRMET
AA	Airport advisory
CWT	Caution wake turbulence
D	DVFR
DA	Decided against flight
DD	Decided to delay flight
DW	Downwind
FP	Filed flight plan
I	IFR
IC	Incomplete briefing
PB	Pilot brief
RY	Runway
S	SVFR
V	VFR
VNR	VFR flight not recommended (pilot brief)
WS	SIGMET
WST	Convective SIGMET

h. Record ATC instructions and clearances completely and exactly.

i. Summarize other data using approved symbols and contractions. See FIG 4−1−4 and FIG 4−1−5.

j. Do not record issuance of altimeter setting unless that is the only information provided during the contact.

FIG 4−1−4

Control Information Symbols Chart 1

Symbols	Meaning
T→( )	Depart (direction, if specified)
↑	Climb and maintain
↓	Descend and maintain
→	Cruise
@	At
X	Cross
-M→	Maintain
$\bar{7}$	Join or intercept airway/jet route/track or course
=	While in controlled airspace
△	While in control area
↘△	Enter control area
△↗	Out of control area
NW NE E	Cleared to enter, depart or through surface area indicated direction of flight by arrow and appropriate compass letter. Maintain Special VFR conditions (altitude if appropriate) while in surface area
250 K	Aircraft requested to adjust speed to 250 knots.
-20K	Aircraft requested to reduce speed 20 knots.
+30K	Aircraft requested to increase speed 30 knots.
W	Local Special VFR operations in the vicinity of (name) airport are authorized until (time). Maintain special VFR conditions (altitude if appropriate).
>	Before
<	After or Past
170 (red)	Inappropriate altitude/flight level for direction of flight. (Underline assigned altitude/flight level in red.)
/	Until
( )	Alternate instructions
Restriction	Restriction
⊤↓	At or Below
↑⊥	At or Above
-(Dash)	From-to (route, time, etc.)
(Alt)B(Alt)	Indicates a block altitude assignment. Altitudes are inclusive, and the first altitude must be lower than the second. Example: 310B370
∨ <	Clearance void if aircraft not off ground by (time)

NOTE: The absence of an airway route number between two fixes in the route of flight indicates "direct"' no symbol or abbreviation is required.

FIG 4−1−5

Control Information Symbols Chart 2

Symbols	Meaning
CL	Pilot cancelled flight plan
✓	EN ROUTE: Aircraft has reported at assigned altitude, Example: 80 ✓
✓	TERMINAL/FSS: Information forwarded (indicated information forwarded as required)
◯ (red)	EN ROUTE: Information or revised information forwarded. (Circle, in red, inappropriate altitude/flight level for direction of flight or orther control information when coordinated. Also circle, in red, the time (minutes and altitude when a flight plan or estimate is forwarded. Use this method in both inter-center and intra-center coordination)
50	Other than assigned altitude reported (circle reported altitude)
H 10/6	DME holding (use with mileages) (Upper figure indicates distance from station to DME fix; lower figure indicates length of holding pattern.) In this example, the DME fix is 10 miles out with a 6-mile pattern indicated.
(mi.)(dir.)	DME arc of VORTAC, TACAN, or MLS
C(freq.)	Contact (facility) or (freq.), (time, fix, or altitude if appropriate). Insert frequency only when it is other than standard.
R	Radar contact
R	EN ROUTE: Requested altitude (preceding altitude information)
~~R~~	Radar service terminated
~~R~~	Radar contact lost
RV	Radar vector
R	Radar handoff (circle symbol when handoff completed)
E (red)	EMERGENCY
W (red)	WARNING
P	Points out initiated. Indicated the appropriate facility, sector, or position. Example: PZFW/
FUEL	Minimum fuel

NOTE: The absence of an airway route number between two fixes in the route of flight indicates "direct'" no symbol or abbreviation is required.

Section 2. Radio Communications

4–2–1. FREQUENCY USE

a. Monitor assigned radio frequencies continuously. Keep speaker volumes at a level sufficient to hear all transmissions.

b. Use radio frequencies for the specific purposes for which they are intended. A frequency may be used for more than one function when required.

c. Use the minimum number of frequencies to conduct communications.

d. Request pilots file flight plans on discrete frequencies when possible.

4–2–2. AUTHORIZED TRANSMISSIONS

a. Transmit only those messages necessary for safe and efficient use of the NAS.

1. Relay operational information to an aircraft or its company, as requested, when abnormal conditions necessitate such requests. Do not agree to handle such messages on a regular basis.

2. Relay official FAA messages as required.

b. Inform an aircraft of the source of any message you relay from an appropriate authority.

c. Use the words or phrases in radio communications as contained in the Pilot/Controller Glossary.

4–2–3. RADIO MESSAGE FORMAT

a. Use the following format for radio communications with an aircraft:

1. Identification of aircraft.

2. Identification of the calling unit.

3. The type of message to follow when this will assist the pilot.

4. The word "over," if necessary.

b. Specialist initiated call. State the prefix (for example, "November" when establishing initial communications with U.S. registered aircraft), followed by the ICAO phonetic pronunciation of the numbers/letters of the aircraft registration. The specialist may state the aircraft type, the model, the manufacturer's name, followed by the ICAO phonetic pronunciation of the numbers/letters of the aircraft registration if used by the pilot on the initial or subsequent call.

NOTE–
See TBL 2–3–1 and TBL 2–3–2 for ICAO phonetics.

EXAMPLE–
Specialist initiated call:
"November one two three four golf, Juneau Radio, over."
"Piper three four seven seven papa, Fort Worth Radio, A–T–C clearance, over."

c. Replying to call up from aircraft. Identification of the aircraft initiating the call up. Use the full identification in reply to aircraft with similar sounding identifications. For other aircraft, use the same identification the pilot used in initial call up; then use the correct identification after communication has been established. The specialist may state the aircraft type, model, or manufacturer's name followed by the ICAO phonetic pronunciation of the numbers/letters of the aircraft registration if used by the pilot.

EXAMPLE–
Responding to pilot's initial or subsequent call:
"Jet Commander one two three four papa."
"Bonanza one two three four tango."
"November six three eight mike foxtrot."

d. Specialists must use the word "super" as part of the identification in all communications with or about super aircraft.

EXAMPLE–
Super A−three−eighty−eight.

e. Specialists must use the word "heavy" as part of the identification in communications with or about heavy jet aircraft.

EXAMPLE–
United Fifty−Eight Heavy.

NOTE–
Most airlines use the word "super" or "heavy" following the company prefix and trip number when establishing communications or when changing frequencies.

f. When in radio−telephone communications with "Air Force One," do not add the "heavy" designator to the call sign. State only the call sign "Air Force One" regardless of the type of aircraft.

g. Preface a clearance or instruction intended for a specific aircraft with the identification of that aircraft.

h. Emphasize appropriate digits, letters, or similar sounding words to aid in distinguishing between similar sounding aircraft identifications. Additionally, notify each pilot concerned when communicating with aircraft having similar sounding identifications.

EXAMPLE–
"American five twenty−one and American twenty−one, transmissions being made to each of you on this frequency."
"Advisory to Cessna one three two four, transmissions to Cessna one three two four also being made on this frequency."

4−2−4. ABBREVIATED TRANSMISSION

Transmissions may be abbreviated as follows:

a. Use the identification prefix and the last three digits or letters of the aircraft identification after communications have been established. Do not abbreviate similar sounding aircraft identifications or the identification of an air carrier or other civilian aircraft having an FAA−authorized call sign.

b. Omit the facility identification after communication has been established.

c. Transmit the message immediately after the call up (without waiting for the aircraft's reply) when the message is short and receipt is generally assured.

d. Omit the word "over" if the message obviously requires a reply.

4−2−5. ROUTINE RADIO CONTACTS

Prior to terminating the contact, provide the following information if it is pertinent and the pilot indicates that it has not been received previously.

a. Adverse weather. Inform the pilot of any pertinent adverse weather (for example, AIRMET, G−AIRMET, SIGMET, Convective SIGMET, CWA, or urgent PIREP) affecting the aircraft's position, route, or destination.

b. NOTAM. Inform the pilot of any pertinent NOTAMs affecting the flight.

c. Altimeter setting.

1. If the aircraft is operating below 18,000 feet MSL, issue current altimeter setting obtained from direct reading instruments or received from weather reporting stations. Use the setting for the location nearest the position of the aircraft.

2. If the aircraft is arriving or departing a local airport served by an operating control tower, issue altimeter setting on request only.

3. When a pilot acknowledges that he/she has received the AFIS broadcast, specialists may omit those items contained in the broadcasts if they are current (Alaska only).

4. Specialists must advise aircraft arriving or departing from a non−towered airport which has a commissioned automated weather reporting with ground−to−air capability to monitor the automated weather frequency for the altimeter setting.

PHRASEOLOGY−
MONITOR (location) AUTOMATED WEATHER FOR CURRENT ALTIMETER.

NOTE−
This requirement is omitted if the pilot states that he/she has the automated weather.

5. When the barometric pressure is greater than 31.00 inches Hg, Flight Standards will implement high barometric pressure procedures by NOTAM, defining the geographic area affected. When this occurs, use the following procedures:

(a) IFR aircraft. Issue the altimeter setting and advise the pilot that high pressure altimeter setting procedures are in effect. Control facilities will issue specific instructions when relaying IFR clearances and control instructions through FSS facilities when the altimeter is above 31.00 inches Hg.

(b) VFR aircraft. Issue the altimeter setting. Advise the pilot that high pressure altimeter setting procedures are in effect and to use an altimeter setting of 31.00 inches Hg en route.

PHRASEOLOGY−
ALTIMETER IN EXCESS OF THREE ONE ZERO ZERO. HIGH PRESSURE ALTIMETER SETTING PROCEDURES ARE IN EFFECT. RECOMMEND YOU SET ALTIMETER THREE ONE ZERO ZERO EN ROUTE.

NOTE−
Airports unable to accurately measure barometric pressures above 31.00 inches Hg will report the barometric pressure as missing or in excess of 31.00 inches Hg. Flight operations to or from those airports are restricted to VFR weather conditions.

REFERENCE−
AIM, Chapter 7, Section 2, Barometric Altimeter Errors and Setting Procedures.
FAA Order JO 7110.65 Para 2−7−2, Altimeter Setting Issuance Below Lowest Usable FL, Subpara g.

6. If a request for the altimeter setting in millibars is received, use the setting for the location nearest the position of the aircraft and convert to the millibars equivalent value using a millibars conversion chart. If the millibars setting is not a whole number, always round down. See TBL 4−2−1.

TBL 4−2−1

Millibar Conversion Chart

Inches	Millibars	Inches	Millibars	Inches	Millibars	Inches	Millibars	Inches	Millibars	Inches	Millibars	Inches	Millibars	Inches	Millibars
27.50	931.3	28.00	948.2	28.50	965.1	29.00	982.1	29.50	999.0	30.00	1015.9	30.50	1032.8	31.00	1049.8
27.51	931.6	28.01	948.5	28.51	965.5	29.01	982.4	29.51	999.3	30.01	1016.3	30.51	1033.2	31.01	1050.1
27.52	931.9	28.02	948.9	28.52	965.8	29.02	982.7	29.52	999.7	30.02	1016.6	30.52	1033.5	31.02	1050.5
27.53	932.3	28.03	949.2	28.53	966.1	29.03	983.1	29.53	1000.0	30.03	1016.9	30.53	1033.9	31.03	1050.8
27.54	932.6	28.04	949.5	28.54	966.5	29.04	983.4	29.54	1000.3	30.04	1017.3	30.54	1034.2	31.04	1051.1
27.55	933.0	28.05	949.9	28.55	966.8	29.05	983.7	29.55	1000.7	30.05	1017.6	30.55	1034.5	31.05	1051.5
27.56	933.3	28.06	950.2	28.56	967.2	29.06	984.1	29.56	1001.0	30.06	1017.9	30.56	1034.9	31.06	1051.8
27.57	933.6	28.07	950.6	28.57	967.5	29.07	984.4	29.57	1001.4	30.07	1018.3	30.57	1035.2	31.07	1052.2
27.58	934.0	28.08	950.9	28.58	967.8	29.08	984.8	29.58	1001.7	30.08	1018.6	30.58	1035.6	31.08	1052.5
27.59	934.3	28.09	951.2	28.59	968.2	29.09	985.1	29.59	1002.0	30.09	1019.0	30.59	1035.9	31.09	1052.8
27.60	934.6	28.10	951.6	28.60	968.5	29.10	985.4	29.60	1002.4	30.10	1019.3	30.60	1036.2	31.10	1053.2
27.61	935.0	28.11	951.9	28.61	968.8	29.11	985.8	29.61	1002.7	30.11	1019.6	30.61	1036.6	31.11	1053.5
27.62	935.3	28.12	952.3	28.62	969.2	29.12	986.1	29.62	1003.0	30.12	1020.0	30.62	1036.9	31.12	1053.8
27.63	935.7	28.13	952.6	28.63	969.5	29.13	986.5	29.63	1003.4	30.13	1020.3	30.63	1037.3	31.13	1054.2
27.64	936.0	28.14	952.9	28.64	969.9	29.14	986.8	29.64	1003.7	30.14	1020.7	30.64	1037.6	31.14	1054.5
27.65	936.3	28.15	953.3	28.65	970.2	29.15	987.1	29.65	1004.1	30.15	1021.0	30.65	1037.9	31.15	1054.9
27.66	936.7	28.16	953.6	28.66	970.5	29.16	987.5	29.66	1004.4	30.16	1021.3	30.66	1038.3	31.16	1055.2
27.67	937.0	28.17	953.9	28.67	970.9	29.17	987.8	29.67	1004.7	30.17	1021.7	30.67	1038.6	31.17	1055.5
27.68	937.4	28.18	954.3	28.68	971.2	29.18	988.1	29.68	1005.1	30.18	1022.0	30.68	1038.9	31.18	1055.9
27.69	937.7	28.19	954.6	28.69	971.6	29.19	988.5	29.69	1005.4	30.19	1022.4	30.69	1039.3	31.19	1056.2
27.70	938.0	28.20	955.0	28.70	971.9	29.20	988.8	29.70	1005.8	30.20	1022.7	30.70	1039.6	31.20	1056.6
27.71	938.4	28.21	955.3	28.71	972.2	29.21	989.2	29.71	1006.1	30.21	1023.0	30.71	1040.0	31.21	1056.9
27.72	938.7	28.22	955.6	28.72	972.6	29.22	989.5	29.72	1006.4	30.22	1023.4	30.72	1040.3	31.22	1057.2
27.73	939.0	28.23	956.0	28.73	972.9	29.23	989.8	29.73	1006.8	30.23	1023.7	30.73	1040.6	31.23	1057.6
27.74	939.4	28.24	956.3	28.74	973.2	29.24	990.2	29.74	1007.1	30.24	1024.0	30.74	1041.0	31.24	1057.9
27.75	939.7	28.25	956.7	28.75	973.6	29.25	990.5	29.75	1007.5	30.25	1024.4	30.75	1041.3	31.25	1058.2
27.76	940.1	28.26	957.0	28.76	973.9	29.26	990.8	29.76	1007.8	30.26	1024.7	30.76	1041.6	31.26	1058.6
27.77	940.4	28.27	957.3	28.77	974.3	29.27	991.2	29.77	1008.1	30.27	1025.1	30.77	1042.0	31.27	1058.9
27.78	940.7	28.28	957.7	28.78	974.6	29.28	991.5	29.78	1008.5	30.28	1025.4	30.78	1042.3	31.28	1059.3
27.79	941.1	28.29	958.0	28.79	974.9	29.29	991.9	29.79	1008.8	30.29	1025.7	30.79	1042.7	31.29	1059.6
27.80	941.4	28.30	958.3	28.80	975.3	29.30	992.2	29.80	1009.1	30.30	1026.1	30.80	1043.0	31.30	1059.9
27.81	941.8	28.31	958.7	28.81	975.6	29.31	992.6	29.81	1009.5	30.31	1026.4	30.81	1043.3	31.31	1060.3
27.82	942.1	28.32	959.0	28.82	976.0	29.32	992.9	29.82	1009.8	30.32	1026.8	30.82	1043.7	31.32	1060.6
27.83	942.4	28.33	959.4	28.83	976.3	29.33	993.2	29.83	1010.2	30.33	1027.1	30.83	1044.0	31.33	1061.0
27.84	942.8	28.34	959.7	28.84	976.6	29.34	992.6	29.84	1010.5	30.34	1027.4	30.84	1044.4	31.34	1061.3
27.85	943.1	28.35	960.0	28.85	977.0	29.35	993.9	29.85	1010.8	30.35	1027.8	30.85	1044.7	31.35	1061.6
27.86	943.4	28.36	960.4	28.86	977.3	29.36	994.2	29.86	1011.2	30.36	1028.1	30.86	1045.0	31.36	1062.0
27.87	943.8	28.37	960.7	28.87	977.7	29.37	994.6	29.87	1011.5	30.37	1028.4	30.87	1045.4	31.37	1062.3
27.88	944.1	28.38	961.1	28.88	978.0	29.38	994.9	29.88	1011.9	30.38	1028.8	30.88	1045.7	31.38	1062.6
27.89	944.5	28.39	961.4	28.89	978.3	29.39	995.3	29.89	1012.2	30.39	1029.1	30.89	1046.1	31.39	1063.0
27.90	944.8	28.40	961.7	28.90	978.7	29.40	995.6	29.90	1012.5	30.40	1029.5	30.90	1046.4	31.40	1063.3
27.91	945.1	28.41	962.1	28.91	979.0	29.41	995.9	29.91	1012.9	30.41	1029.8	30.91	1046.7	31.41	1063.7
27.92	945.5	28.42	962.4	28.92	979.3	29.42	996.3	29.92	1013.2	30.42	1030.1	30.92	1047.1	31.42	1064.0
27.93	945.8	28.43	962.8	28.93	979.7	29.43	996.6	29.93	1013.5	30.43	1030.5	30.93	1047.4	31.43	1064.3
27.94	946.2	28.44	963.1	28.94	980.0	29.44	997.0	29.94	1013.9	30.44	1030.8	30.94	1047.7	31.44	1064.7
27.95	946.5	28.45	963.4	28.95	980.4	29.45	997.3	29.95	1014.2	30.45	1031.2	30.95	1048.1	31.45	1065.0
27.96	946.8	28.46	963.8	28.96	980.7	29.46	997.6	29.96	1014.6	30.46	1031.5	30.96	1044.4	31.46	1065.4
27.97	947.2	28.47	964.1	28.97	981.0	29.47	998.0	29.97	1014.9	30.47	1031.8	30.97	1048.8	31.47	1065.7
27.98	947.5	28.48	964.4	28.98	981.4	29.48	998.3	29.98	1015.2	30.48	1032.2	30.98	1049.1	31.48	1066.0
27.99	947.9	28.49	964.8	28.99	981.7	29.49	998.6	29.99	1015.6	30.49	1032.5	30.99	1049.4	31.49	1066.4

d. Incorrect cruising altitude. If the aircraft is operating VFR at an altitude between 3,000 feet AGL to, but not including, FL180 and reports at an incorrect cruising altitude for the direction of flight, issue a VFR cruising altitude advisory.

PHRASEOLOGY−
V−F−R CRUISING LEVELS FOR YOUR DIRECTION OF FLIGHT ARE: (Odd/Even) ALTITUDES PLUS FIVE HUNDRED FEET.

NOTE−
Managers of facilities located in those areas where VFR altitude separation is below 3,000 feet AGL or above FL 180 must provide specialists with appropriate phraseology examples for local use.

4−2−6. RADIO COMMUNICATIONS TRANSFER

Transfer radio communications by specifying the following:

a. The name of the facility to be contacted and the frequency.

PHRASEOLOGY−
CONTACT (name of facility) ON (frequency).

b. In situations where an aircraft will continue to communicate with your facility, use the following:

PHRASEOLOGY−
CONTACT (name of service) ON (frequency).

4−2−7. ATC CLEARANCES, ADVISORIES, OR REQUESTS

a. Notify ATC via interphone of a pilot's request for clearance and include the departure and destination airports and, if appropriate, departing runway and time in the request. Forward pilot requests to execute a visual climb over airport procedure to ATC. Relay, verbatim, ATC clearances, advisories, and requests received from the control facility. Give a time check to the nearest quarter minute when relaying a clearance that includes a release or void time.

NOTE−
For ATC clearances, "verbatim" means exact control instructions in the format stated in FAA Order JO 7110.65, Air Traffic Control, Chapter 4, Section 2, Clearances, and Section 3, Departure Procedures.

PHRASEOLOGY−
Aircraft on the ground:
(ARTCC facility's name) Center FLIGHT DATA, CLEARANCE REQUEST or
(Facility) RADIO, CLEARANCE REQUEST.
After go-ahead from ATC,
(Aircraft identification) DEPARTING (airport), RUNWAY (number if applicable) DESTINATION (fix or airport). (If applicable), CAN BE OFF AT (time).
Aircraft airborne:
(Facility) RADIO, CLEARANCE REQUEST.
After go-ahead from ATC:
(Aircraft identification), (position), (altitude), (route), AND (destination).

b. Prefix all ATC clearances, advisories, or requests with the appropriate phrase "A−T−C CLEARS," "A−T−C ADVISES," etc.

c. When issuing information, relaying clearances, or instructions, ensure acknowledgement by the pilot.

d. If altitude, heading, or other items are read back by the pilot, ensure the read-back is correct. If incorrect or incomplete, make corrections as appropriate.

NOTE−
Pilots may acknowledge clearances, instructions, or information by using "Wilco," "Roger," "Affirmative," or other appropriate words or remarks.

REFERENCE−
Pilot/Controller Glossary.

4−2−8. DEPARTURE REPORTS

a. When an IFR aircraft reports airborne or is observed airborne, transmit the aircraft identification and departure time to the control facility from which the clearance was received.

PHRASEOLOGY−
(Facility) RADIO. DEPARTURE. (aircraft identification), (time).

NOTE−
1. *This includes known VFR departure times of aircraft which are to obtain IFR clearances when airborne.*

2. *The requirement for transmitting departure reports may be omitted if requested by the IFR control facility, provided the procedures are specified in a Letter of Agreement.*

b. When an aircraft which has filed an IFR flight plan requests a VFR departure, facilitate the request as follows:

1. 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, relay the pilot's intentions and, if possible, the VFR departure time to the facility/sector holding the flight plan.

2. After obtaining approval from the facility/ sector responsible for issuing the IFR clearance, an aircraft planning IFR flight may be authorized 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.

(a) When requesting:

PHRASEOLOGY−
(Facility) RADIO. (Aircraft identification), REQUEST V−F−R DEPARTURE.

(b) When relaying to aircraft:

PHRASEOLOGY−
A−T−C ADVISES (Aircraft identification) V−F−R DEPARTURE APPROVED. CONTACT (facility) ON (frequency) AT (location or time, if required) FOR CLEARANCE.

(c) Relaying to control facility:

PHRASEOLOGY−
(Facility) RADIO. (Aircraft identification) DEPARTED V−F−R AT (time).

4−2−9. IFR FLIGHT PROGRESS REPORTS

Relay to the appropriate ATC facility the aircraft identification, position, time, altitude, estimate of next reporting point, name of subsequent reporting point, and any pilot remarks or requests including amended flight plan data.

PHRASEOLOGY−
(Facility) RADIO. PROGRESS. (Aircraft identification), (position), (altitude), (time) (name and estimate of next reporting point) (name of subsequent reporting point) (pilot's remarks).

4−2−10. ARRIVAL/MISSED APPROACH REPORTS

Relay to the appropriate ATC facility, by the most expeditious means available, the time that an IFR aircraft lands, cancels, or executes a missed approach, and intentions, if known.

4−2−11. NON-DELIVERY OF MESSAGES

Inform ATC when a message has not been delivered within:

a. Three minutes of receipt; or

b. Three minutes after the specified delivery time; or

c. A specified cancellation time.

4−2−12. BROADCAST (BLIND TRANSMISSION) OF MESSAGES

Broadcast messages as requested by ATC. If no accompanying transmitting instructions are received, transmit the message four times:

a. Once upon receipt; and

b. At approximately 3-minute intervals thereafter.

4−2−13. UNAUTHORIZED ENTRY INTO CLASS A AIRSPACE OR PROHIBITED/RESTRICTED AREA

a. Unauthorized entry into Class A airspace. When a VFR aircraft's position report indicates an unauthorized entry into of Class A airspace:

1. Inform the pilot of the Class A airspace unauthorized entry and request intentions.

PHRASEOLOGY−
YOU ARE IN CLASS A AIRSPACE. AN A−T−C CLEARANCE IS REQUIRED. REQUEST YOUR INTENTIONS.

2. Inform the control facility immediately.

3. Relay ATC instructions.

b. Unauthorized entry into prohibited/restricted areas. When an aircraft report indicates unauthorized entry into a prohibited/restricted area:

1. Inform the pilot.

PHRASEOLOGY−
YOU ARE IN A PROHIBITED/RESTRICTED AREA, AUTHORIZATION IS REQUIRED. REQUEST YOUR INTENTIONS.

2. Inform the control facility immediately. Relay ATC instructions.

4−2−14. NON-EMERGENCY PARACHUTE JUMPING

a. Specialists must forward all pertinent information received from pilots prior to and during parachute jumping activity to other affected ATC facilities.

b. When a pre-jump radio call required by 14 CFR 105.13 is received, contact the ARTCC sector or terminal facility in whose airspace the jump begins. If the controller has pertinent traffic, advise the jump aircraft to contact the control facility on the appropriate frequency for traffic information.

c. If the aircraft is unable to contact the control facility directly, obtain traffic information and relay it to the aircraft.

EXAMPLE−
"Cessna four zero Yankee, A−T−C advises traffic, Cessna Four twenty-one passing SPITS intersection eastbound on Victor one fifty-seven at seven thousand."

Section 3. Advisory Services

4−3−1. DESCRIPTION

Advisory services are those provided at airports without an operating control tower that have certified automated weather reporting via voice capability or at remote locations that have noncertified automated weather reporting (for example, weather cameras) via voice capability. The service depends on the location of the FSS and communications capabilities. There are four types:

a. Local Airport Advisory (LAA). LAA is a service provided by facilities that are located on the airport and have:

1. Ground-to-air communication on the CTAF.

2. Automated weather reporting with voice broadcasting.

3. A continuous automated weather data display.

4. Other continuous direct reading instruments or manual observations available to the specialist.

b. Remote Airport Advisory (RAA). RAA is a remote service which may be provided at select locations by facilities that are not located on the airport and have:

1. Ground-to-air communication on the CTAF.

2. Automated weather reporting with voice broadcasting.

3. A continuous automated weather data display.

4. Other continuous direct reading instruments or manual observations available to the specialist.

c. Remote Airport Information Service (RAIS). RAIS is a temporary service provided by facilities in Alaska which are not located on the airport but have:

1. Communication capability.

2. Automated weather reporting available to the pilot at the airport.

NOTE−
FAA policy requires pilots to access the current automated weather prior to requesting any remote ATC services at non−towered airports. It is the pilot's responsibility to comply with the CFRs if landing clearance is required.

d. Remote Weather Advisory Service (RWAS). RWAS is a remote service which may be provided at select locations (airports or remote) by facilities that are not collocated but have:

1. A continuous automated weather data display with access to noncertified weather information (for example, weather cameras).

2. Communication capability.

4−3−2. GENERAL

a. If a pilot asks for airport advisory services at an airport where the requested service is not available but one of the services is available, inform the pilot about what service is available, and provide the appropriate service.

PHRASEOLOGY−
(Airport name) AIRPORT ADVISORY IS NOT AVAILABLE. REMOTE AIRPORT INFORMATION…

b. At airports with commissioned automated weather with continuous automated voice capability, instruct the pilot to monitor the automated broadcast and advise intentions.

PHRASEOLOGY−
MONITOR (location) AUTOMATED WEATHER (frequency). ADVISE INTENTIONS.

1. When the pilot indicates receipt of automated weather, provide the appropriate non-weather elements.

2. If the pilot reports the automated weather is out of service, provide the last reported weather available and the appropriate non−weather elements.

c. Advise the pilot that the requested airport advisory/RAIS service is not available. Provide CTAF frequency and/or the automated weather frequency, when available. When not available, issue the last known surface condition and altimeter.

PHRASEOLOGY−
(Airport name) AIRPORT ADVISORY or AIRPORT INFORMATION NOT AVAILABLE. CONTACT (airport name) CTAF (frequency).

d. During initial contact, if the pilot indicates receipt of automated weather, provide only the appropriate non-weather elements. Do not provide weather information unless specifically requested by the pilot or a special report is transmitted.

EXAMPLE−
RAIS
Pilot: "N408SR reporting fifteen miles southwest for runway eight, Barrow, I have the automated weather."
FSS: "N408SR traffic, Cessna two-zero-eight reported inbound ten miles southwest of Barrow airport, three minutes ago."

e. If additional pilots initiate contact a short time after airport advisory services were provided, determine if the new pilot(s) copied the information when it was provided.

1. If the new pilot responds in the affirmative, do not repeat the information.

2. If the new pilot acknowledges the airport advisory information and then requests specific information, provide only the information requested.

NOTE−
The intent is to reduce frequency clutter while insuring that the pilots are aare of the situation as it changes.

f. Final guard is a service provided in conjunction with airport advisory only during periods of significant and fast changing weather conditions that may affect landing and takeoff operations.

g. Where AFIS is available, confirm receipt of the current AFIS information if the pilot does not initially state the appropriate AFIS code. Issue the current AFIS information to pilots who are unable to receive the AFIS or pilots that do not have the information.

EXAMPLE−
"Verify you have information ALPHA."

h. If the pilot requests special VFR clearance, provide the appropriate elements and follow the procedures in Chapter 4, Section 6, Special VFR Operations.

4−3−3. ELEMENTS AND PHRASEOLOGY

a. State the airport name and the type of service being provided: airport advisory or airport information.

EXAMPLE−
"(Airport name), AIRPORT ADVISORY . . ."
or
"(Airport name), AIRPORT INFORMATION . . ."

NOTE−
At FSS facilities with AFIS equipment, if an aircraft has acknowledged receipt of the AFIS message, traffic advisories and additional information need not be preceded by the phrase "(Airport name) AIRPORT ADVISORY."

b. Provide the following information as needed to best serve the current traffic situation. Do not approve or disapprove simulated instrument approaches.

1. Wind direction and speed.

2. Favored or designated runway. The specialist must check the current wind data and provide the aircraft the favored or designated runway information as follows:

(a) For takeoff and landing operations state the runway most nearly aligned into the wind.

(b) Inform the pilot when the current wind direction is varying enough that the selection of the favored runway may be affected, when there is more than 10 knots between peaks and lulls, or the pilot has requested the information.

(c) If there is no wind, state the runway currently in use, the runway favored by a shorter taxiway, or other local consideration.

(d) When airport management has designated a runway to be used under certain wind or other conditions (and has informed the FSS in writing) issue runway information accordingly.

(e) If the majority of the traffic has been using a runway other than the favored or designated runway, advise the pilot.

EXAMPLE−
Landing airport has runways twenty-seven (longer) and thirty-two with most pilots utilizing the shorter runway. "WIND VARIABLE BETWEEN TWO EIGHT ZERO AND THREE FOUR ZERO AT ONE FIVE GUSTS TWO EIGHT, FAVORED RUNWAY THREE TWO."

(f) When a pilot advises he/she will use a runway other than the favored or the designated runway, inform all known concerned traffic.

PHRASEOLOGY−
ATTENTION ALL AIRCRAFT. (Aircraft type) DEPARTING/LANDING RUNWAY (number).

(g) If a pilot requests the distance between an intersection and the runway end, furnish measured data from the local airport intersection takeoff diagram or other appropriate sources.

(h) Do not provide a favored or designated runway as part of a RAIS.

3. Altimeter setting.

(a) Airport advisory: Apply special procedures when the altimeter setting is more than 31.00 inches Hg. Stations with the capability of reading altimeter settings above 31.00 inches Hg must issue altimeter settings to aircraft.

PHRASEOLOGY−
ALTIMETER IN EXCESS OF THREE ONE ZERO ZERO. HIGH PRESSURE ALTIMETER SETTING PROCEDURES ARE IN EFFECT. RECOMMEND YOU SET ALTIMETER TO THREE ONE ZERO ZERO EN ROUTE."

(b) RAIS. Do not provide the altimeter unless specifically requested. Then, provide the altimeter from the last official weather report.

4. Traffic. Information about observed or reported traffic, which may constitute a collision hazard. This may include positions of aircraft in−flight and/or aircraft and vehicles operating on the airport.

PHRASEOLOGY−
TRAFFIC (Aircraft type), (position), (minutes) AGO.

5. Unmanned aircraft activity information. Issue unmanned aircraft advisory information for known, observed, or pilot−reported unmanned aircraft activity when, in your judgment, proximity warrants it. If known, include position, altitude, distance, course, and type of unmanned aircraft. For reported unmanned aircraft activity, continue to issue advisories to potentially impacted aircraft for at least 15 minutes following the last report.

EXAMPLE−
"Unmanned aircraft activity, two miles east of Ketchikan airport, 300 feet and below"
"Unmanned aircraft activity observed, approximately one mile east of Kenai airport, altitude unknown."

6. Braking action/NOTAM. Furnish braking action reports as received from pilots to all aircraft as follows:

(a) Describe braking action using the terms "good," "good to medium," "medium," "medium to poor," "poor," or "nil." If the pilot reports braking action in other than the approved terms, ask them to categorize braking action in these terms.

(b) When known, include the type of aircraft or vehicle from which the report is received.

EXAMPLE–
"Braking action poor."
"Braking action medium, reported by a Cessna four-twenty-one."

(c) If the braking action report affects only a portion of a runway, obtain enough information from the pilot to describe braking action in terms easily understood by other pilots. Use descriptive terms (for example, first/last half of the runway) rather than landmark descriptions (for example, opposite the fire station, south of a taxiway).

EXAMPLE–
"Braking action poor first half of runway six, reported by a Gulfstream two."
"Braking action medium runway two-seven, reported by a Boeing seven thirty-seven."

7. Upon request, provide runway condition codes as received from airport management to aircraft as follows:

(a) State the runway number followed by the runway condition code for each of the three runway zones and the time of the report in UTC.

(b) Issue FICON NOTAMs upon pilot request.

EXAMPLE–
"Runway two seven, runway condition code two, two, one at one zero one eight Zulu."

8. Issue the runway surface condition and/or the RCR, if provided, to all U.S. Air Force and Air National Guard aircraft. Issue the RCR to other aircraft upon request.

EXAMPLE–
"Ice on runway, R−C−R zero five, patchy."

NOTE–
The U.S. Air Force has established RCR procedures for determining the average deceleration readings of runways under conditions of water, slush, ice, or snow. The use of RCR code is dependent upon the pilot's having a "stopping capability chart" specifically applicable to his/her aircraft. U.S. Air Force offices furnish RCR information at airports serving the U.S. Air Force and Air National Guard aircraft.

9. NOTAM. NOTAMs concerning local NAVAIDs and local field conditions/airspace conditions pertinent to flight (for example, local NAVAIDs, TFRs).

EXAMPLE–
"All runways covered by packed snow six inches deep."

10. Weather. When the pilot does not have the weather conditions, issue the last reported or known weather information as follows (airport advisory/RAIS):

(a) Wind direction and speed.

(b) Altimeter (except RAIS).

(c) Ceiling and visibility to VFR aircraft when less than basic VFR conditions exist.

(d) Visibility to VFR aircraft when it is less than three miles in any quadrant.

(e) Touchdown RVR for the runway in use where RVR readout equipment is located at the workstation providing the service.

(f) To IFR aircraft executing an instrument approach or departure and to the appropriate control facility when visibility is less than three miles or when the ceiling is less than 1,000 feet or below the highest circling minimum, whichever is greater.

11. Weather advisory alert. Provide in accordance with subparagraph 4−2−5a.

PHRASEOLOGY−
(Advisory description) IS CURRENT FOR (condition) OVER (area).

12. Density altitude.

(a) Facilities at airports with field elevations of 2,000 MSL or higher, transmit a density altitude advisory to departing general aviation aircraft whenever the temperature reaches the criteria contained in TBL 4−3−1.

TBL 4−3−1
Density Altitude

Field Elevation	Temperature (C)
2,000−2,999	29 degrees or higher
3,000−3,999	27 degrees or higher
4,000−4,999	24 degrees or higher
5,000−5,999	21 degrees or higher
6,000−6,999	18 degrees or higher
7,000−higher	16 degrees or higher

PHRASEOLOGY−
CHECK DENSITY ALTITUDE.

(b) Omit this advisory if pilot states the computation has been done or if the specialist is aware that a density altitude computation for that aircraft was included in the pre-flight briefing.

13. Wake turbulence. Issue cautionary information to any aircraft if in your judgment wake turbulence may have an adverse effect on it.

PHRASEOLOGY−
CAUTION, WAKE TURBULENCE (traffic information).

NOTE−
Wake turbulence may be encountered by aircraft in-flight as well as when operating on the airport movement area. Because wake turbulence is unpredictable, air traffic personnel are not responsible for anticipating its existence or effect.

14. Final guard is a wind and altimeter monitoring service provided in conjunction with airport advisory during periods of significant and/or fast changing weather conditions that may affect landing and takeoff operations. The specialist must monitor the remote display of the current wind and altimeter and provide the aircraft final guard as follows:

(a) When the pilot reports "on final" or "taking the active runway," the specialist must provide them the current wind direction, speed, and altimeter.

(b) If during the landing or takeoff operation conditions change and, in the specialist's opinion, the changing information might be useful to the pilot, the specialist must broadcast the new wind and/or altimeter information in the blind.

(c) Pilots are not required or expected to acknowledge the broadcast.

EXAMPLE−
"N12RG, wind (direction) at (speed)."

NOTE−
Final guard is never provided with RAIS.

4−3−4. CHARTS

Keep charts, or electronic equivalent, depicting runways, local taxi routes, intersection takeoff information, airport traffic patterns, and instrument approach procedures convenient to the position that provides airport advisory service.

4–3–5. AUTHORIZED FREQUENCIES

a. Airport advisory:

1. Provide airport advisory service on the appropriate discrete frequency at non-towered locations and on the tower local control frequency at an airport with a part-time tower when that facility is not operating.

2. If a pilot calls on another frequency, issue advisories on the frequency to which the pilot is listening, in addition to the appropriate Airport Advisory frequency.

3. Encourage the pilot to guard the airport advisory frequency or tower local control frequency within a 10-mile radius of the airport.

NOTE–
In situations where the in-flight position is split, advise pilot of appropriate frequency to obtain Airport Advisory/RAIS.

PHRASEOLOGY–
FOR FURTHER ADVISORY SERVICE AT (airport name), MONITOR (frequency) WITHIN ONE ZERO MILES.

b. RAIS:

1. Provide RAIS on the existing discrete frequency located at the remote airport.

2. If a pilot calls and appears to be unaware that RAIS is available, offer the service.

3. If a pilot calls on another frequency, issue advisories on the frequency the pilot is listening, in addition to the appropriate airport advisory frequency.

4. If RAIS is requested when it is not offered, inform the pilot that the service is not available and follow subparagraph 4–3–1c.

NOTE–
This service is only provided at remote airports that have an existing discrete communications capability between the airport and the FSS serving the airport and a NOTAM D announcing the availability of the service is in effect.

4–3–6. TRAFFIC CONTROL

When there is no control tower in operation and a pilot appears unaware of this fact, inform them as follows:

PHRASEOLOGY–
NO CONTROL TOWER IN OPERATION.

4–3–7. AIRCRAFT EQUIPMENT CHECKS

When requested, provide aircraft equipment inspections such as radio checks or, if able, observed aircraft conditions.

EXAMPLE–
"Radio check, loud and clear."
"Landing gear appears to be down and in place."

Section 4. Automatic Flight Information Service (AFIS)

4−4−1. GENERAL

a. AFIS is available at airports without an operating control tower and receiving LAA.

b. Use the AFIS to provide advanced non-control information to aircraft, such as airport, meteorological, and pertinent NOTAM information.

NOTE−
Use of the AFIS by pilots is not mandatory but pilots who use two−way radio communication with the FSS are urged to use the service.

c. FSS personnel must provide aircraft LAA information when the AFIS is not available.

d. FSS personnel must review the AFIS recording for completeness, accuracy, speech rate, and proper enunciation before being transmitted.

e. Broadcast, on the LAA frequency, the new airport AFIS phonetic alphabet identifier after each new recording.

f. After establishing two-way radio communication, if the pilot does not state that he/she has the current AFIS code, the specialist must either:

1. Use LAA procedures to issue pertinent AFIS information, or

2. Advise the pilot to return to the AFIS frequency.

g. AFIS broadcasts may be suspended within specified time periods. During these periods, the AFIS must contain a brief statement that the AFIS is suspended for the specified time and pilots should contact the FSS for LAA.

PHRASEOLOGY−
(Airport name) FLIGHT INFORMATION BROADCASTS ARE SUSPENDED UNTIL (time). CONTACT (facility name) RADIO ON (frequency) FOR AIRPORT INFORMATION.

h. Part-time and seasonal facilities must record a message with the appropriate frequency and facility contact information as well as known information regarding resumption of LAA.

PHRASEOLOGY−
(Name of FSS) HOURS OF OPERATION ARE (time) LOCAL TIME TO (time) LOCAL TIME. THE COMMON TRAFFIC ADVISORY FREQUENCY IS (frequency) PILOT CONTROLLED LIGHTING IS AVAILABLE ON (frequency). FOR ADDITIONAL INFORMATION CONTACT (name of FSS) ON (frequency).

(Name of FSS) IS CLOSED FOR THE WINTER SEASON. THE COMMON TRAFFIC ADVISORY FREQUENCY IS (frequency). PILOT CONTROLLED LIGHTING IS AVAILABLE ON (frequency). FOR ADDITIONAL INFORMATION CONTACT (name of FSS) ON (frequency).

4−4−2. FORMAT

a. Begin each new AFIS message with the airport/facility name and a phonetic alphabet letter. Specialists must speak the phonetic alphabet letter at the end of the message and be used sequentially, beginning with “ALPHA,” ending with “Zulu.” Full-time facilities must repeat the letter without regard to the beginning of a new day. Part−time facilities must identify the first resumed broadcast message with “ALPHA.”

b. Maintain an AFIS message that reflects the most current local airport information.

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

(a) Upon receipt of any new official weather, regardless of any change in values.

(b) When runway braking action reports are received that indicate runway braking is worse than what was included in the current AFIS broadcast.

(c) When there is a change in any other pertinent data for the airport or surrounding area, such as change in favored runway, new or canceled NOTAMs, AIRMETs, G−AIRMETS, Convective SIGMETs, CWAs, PIREPs, or other information that facilitates the repetitive transmission of essential but routine information.

2. Omit rapidly changing data. When this occurs, the AFIS must contain a statement advising pilots what facility to contact for the omitted data.

EXAMPLE−
"For latest ceiling/visibility/altimeter/wind/(other conditions) contact (facility and frequency)."

c. Use the following format and include the following in AFIS broadcast as appropriate:

1. (Airport/facility name) airport information.

2. Phonetic alphabet designator.

3. Special routing procedures in effect (when appropriate for the Ketchikan area).

4. Time of the AFIS preparation (UTC) followed by the word "Zulu."

5. Include the current weather observation and other pertinent remarks. The ceiling/sky conditions, visibility, and obstruction to vision may be omitted if the ceiling is above 5,000 feet and the visibility is more than five miles.

(a) An aviation surface report is considered current for one hour beyond the standard time of observation (H+00) unless superseded by a special or local observation or by the next hourly report.

(b) Do not broadcast obsolete data.

EXAMPLE−
"The weather is better than five thousand and five."

6. Favored runway and additional local information, as required.

7. NOTAMs concerning local NAVAIDs and field conditions pertinent to flight.

EXAMPLE−
"Notices to Air Missions, Iliamna NDB out of service." "Transcribed weather broadcast out of service."

8. Runway braking action or runway condition codes when provided. Include the time of the report.

PHRASEOLOGY−
RUNWAY (number) condition code (first value, second value, third value) AT (time).

EXAMPLE−
"Runway three-six condition code two, two, one at one zero one eight Zulu."

REFERENCE−
FAA Order JO 7110.10, Para 4−3−3, Elements and Phraseology.

9. Low-level wind shear advisory, including those contained in the TAFs and in PIREPs. Include PIREP information at least 20 minutes following the report.

EXAMPLE−
"Low-level wind shear is forecast."

10. Unauthorized laser illumination events. When a laser event is reported, include reported unauthorized laser illumination events on the AFIS 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 zero one zero zero Zulu, eight-mile final runway one eight at three thousand feet, green laser from the southwest."

11. Man-portable air defense systems (MANPADS) alert and advisory. Specify the nature and location of the 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.

PHRASEOLOGY−
MANPADS ALERT. EXERCISE EXTREME CAUTION. MANPADS THREAT/ATTACK/POST-EVENT ACTIVITY OBSERVED/REPORTED BY (reporting agency) (location) AT (time, if known). (When transmitting to an individual aircraft) ADVISE ON INITIAL CONTACT IF YOU WANT TO DIVERT.

EXAMPLE−
"MANPADS alert. Exercise extreme caution. MANPADS threat reported by TSA, Anchorage area. Advise on initial contact if you want to divert." "MANPADS alert. Exercise extreme caution. MANPADS attack observed by flight service one-half mile northwest of airfield at one-two-five-zero Zulu. Advise on initial contact if you want to divert."

NOTE−
Upon receiving or observing an unauthorized MANPADS alert/advisory, handle in accordance with FAA Order JO 7210.3, paragraph 2−1−10, Handling MANPADS Incidents.

12. Any other advisories applicable to the area covered by the LAA.

13. Local frequency advisory.

PHRASEOLOGY−
CONTACT (facility name) RADIO ON (frequency) FOR TRAFFIC ADVISORIES.

14. Instructions for the pilot to acknowledge receipt of the AFIS message on initial contact.

EXAMPLE−
"Dillingham airport information ALPHA. One six five five Zulu. Wind one three zero at eight; visibility one five; ceiling four thousand overcast; temperature four, dew point three; altimeter two niner niner zero. Favored runway one niner. Notice to Air Missions, Dillingham V−O−R out of service. Contact Dillingham Radio on one two three point six for traffic advisories. Advise on initial contact you have ALPHA."

"Kotzebue information ALPHA. One six five five Zulu. Wind, two one zero at five; visibility two, fog; ceiling one hundred overcast; temperature minus one two, dew point minus one four; altimeter three one zero five. Altimeter in excess of three one zero zero, high pressure altimeter setting procedures are in effect. Favored runway two six. Weather in Kotzebue surface area is below V−F−R minima—an ATC clearance is required. Notice to Air Missions, Hotham NDB out of service. Contact Kotzebue Radio on one two three point six for traffic advisories and advise intentions. Advise on initial contact you have ALPHA."

Section 5. Airport Lighting and Visibility Aids

4–5–1. GENERAL

Airport lighting and visibility aid services are provided at airports without an operating control tower and receiving LAA. The service depends on the location of the FSS and communications capabilities.

4–5–2. AIRPORT LIGHTING

a. General lighting. Operate airport lighting in accordance with associated paragraphs in FAA Order JO 7110.65, Chapter 3, Section 4, Airport Lighting, except:

1. As requested by the pilot.

2. As required by facility directives or letters of agreement to meet local conditions or requirements.

3. As specialist deems necessary if not contrary to pilot's request or local directives.

b. Emergency Lighting. When it appears that an emergency has or will occur, provide for the operation of all appropriate airport lighting aids in accordance with local procedures and/or as required.

4–5–3. CHANGING LIGHTED RUNWAYS

a. To switch lights:

1. Advise all known aircraft that the lights are to be changed, specifying the runway to be lighted.

2. Turn on the lights for the new runway 30 seconds before turning off the other runway lights, equipment permitting.

b. When a pilot requests that other than the favored runway be lighted and two runways cannot be lighted simultaneously, comply with the request if you have no knowledge of the lighted runway being in use. Advise all known aircraft.

4–5–4. VISIBILITY AIDS

a. Where RVR equipment is operational, irrespective of subsequent operation or nonoperation of navigational or visual aids for the application of RVR as a takeoff or landing minima, furnish the values for the runway in use in accordance with paragraph 4–5–5, RVR.

b. Issue current touchdown RVR for the runway(s) in use:

1. When prevailing visibility is one mile or less regardless of the value indicated.

2. When RVR indicates a reportable value regardless of the prevailing visibility.

NOTE–
Reportable values for RVR are 6,000 feet or less.

3. When it is determined from a reliable source that the indicated RVR value differs by more than 400 feet from the actual conditions within the area of the transmissometer, the RVR data is not acceptable and specialists must not report it.

NOTE–
A reliable source is considered to be a certified weather observer, air traffic controller, or pilot.

4. When the observer has reliable reports, or has otherwise determined that the instrument values are not representative of the associated runway, they must not use the data.

4–5–5. RVR

a. Provide RVR information by stating the runway, the abbreviation RVR, and the indicated value. When issued along with other weather elements, transmit these values in the normal sequence used for weather reporting.

b. When two or more RVR systems serve the runway in use, report the indicated values for the different systems in terms of touchdown, mid, and rollout as appropriate.

c. When there is a requirement to issue an RVR value and a visibility condition greater than (P) or less than (M) the reportable values of the equipment is indicated, state the condition as "MORE THAN" or "LESS THAN" the appropriate minimum or maximum readable value.

d. When a readout indicates a rapidly varying visibility condition (1,000 feet or more), report the current value followed by the range of visibility variance.

4−5−6. OPERATION OF LANDING DIRECTION INDICATOR

Align the landing direction indicator with the favored or designated runway.

Section 6. Special VFR Operations

4−6−1. AUTHORIZATION

a. SVFR operations in weather conditions less than VFR minima are authorized:

1. For helicopters and fixed-wing aircraft at any location not prohibited by 14 CFR 91, Appendix D, Section 3, or when an exception to 14 CFR 91, Appendix D, Section 3, has been granted and an associated letter of agreement established.

REFERENCE−
14 CFR Part 91, Appendix D, Section 3, Locations at which Fixed-Wing Special VFR Operations are Prohibited.

2. Only within surface areas.

3. Only when requested by the pilot.

b. When the primary airport is reporting VFR, SVFR operations may be authorized for aircraft transiting surface areas when the pilot advises the inability to maintain VFR.

c. Control facilities must always retain SVFR operations authority when IFR operations are being conducted in surface areas.

4−6−2. REQUESTS FOR SPECIAL VFR CLEARANCE

a. Transmit SVFR clearances only for operations within surface areas on the basis of weather conditions. If weather conditions are not reported, transmit an SVFR clearance whenever a pilot advises unable to maintain VFR and requests an SVFR clearance, provided the pilot reports having at least 1-mile flight visibility.

PHRASEOLOGY−
A−T−C CLEARS (aircraft identification) TO ENTER/OUT OF/THROUGH (name) SURFACE AREA
and if required,
(direction) OF (name) AIRPORT (specified routing), and MAINTAIN SPECIAL V−F−R CONDITIONS,
and if required,
AT OR BELOW (altitude below 10,000 feet MSL), A−T−C CLEARS (aircraft identification) (coded arrival or departure procedure) ARRIVAL/DEPARTURE, (additional instructions as required).

b. Transmit clearance for local SVFR operations for a specified period (series of takeoffs and landings, etc.) upon request if the aircraft can be recalled when traffic or weather conditions require. Letters of agreement may be established.

PHRASEOLOGY−
LOCAL SPECIAL V−F−R OPERATIONS IN THE IMMEDIATE VICINITY OF (name) AIRPORT ARE AUTHORIZED UNTIL (time). MAINTAIN SPECIAL V−F−R CONDITIONS.

c. If an aircraft operating under VFR attempts to enter, depart, or operate within surface areas contrary to the provisions of 14 CFR 91.155 (basic VFR weather minimums), ensure the pilot is aware of the current weather conditions. Provide the following information:

1. At airports with commissioned automated weather with continuous automated voice capability, instruct the pilot to monitor the automated broadcast and advise intentions.

PHRASEOLOGY−
MONITOR (location) AUTOMATED WEATHER (frequency). ADVISE INTENTIONS.

2. At airports without a commissioned automated weather, or, if the pilot is unable to receive the automated weather broadcast, issue the most current weather report available. Advise the pilot that the weather is below VFR minima, and request the pilot's intentions.

PHRASEOLOGY−
(Location) WEATHER, CEILING (height), VISIBILITY (miles). (Location) SURFACE AREA IS BELOW V−F−R MINIMA. AN A−T−C CLEARANCE IS REQUIRED. ADVISE INTENTIONS.

NOTE–
Helicopters performing hover taxiing operations (normally not above 10 feet) within the boundary of the airport are considered to be taxiing aircraft.

d. At a pilot's request, issue a SVFR clearance, if appropriate, when a SVFR letter of agreement exists between an FSS and the control facility. If no agreement exists, request clearance from the control facility. State the aircraft's location and route of flight.

PHRASEOLOGY–
(Facility name) RADIO. REQUEST SPECIAL V−F−R CLEARANCE (aircraft identification) (direction) OF (location) AIRPORT (specified routing) TO ENTER/OUT OF/THROUGH (name) AIRPORT (specified routing).

NOTE–
IFR aircraft normally have priority over SVFR aircraft.

1. If the pilot is operating outside surface area and requests SVFR clearance, issue the clearance or if unable, advise the pilot to maintain VFR outside surface area and to standby for clearance.

PHRASEOLOGY–
MAINTAIN V−F−R OUTSIDE (location) SURFACE AREA. STANDBY FOR CLEARANCE.

2. When an aircraft requests a SVFR clearance to enter surface area during periods of SVFR activity, instruct the pilot to maintain VFR conditions outside surface area pending arrival/recall/departure of SVFR operations.

PHRASEOLOGY–
MAINTAIN V−F−R CONDITIONS OUTSIDE OF THE (location) SURFACE AREA PENDING ARRIVAL/RECALL/DEPARTURE OF IFR/SPECIAL V−F−R AIRCRAFT.

3. If the pilot is operating inside the surface area and requests an SVFR clearance, advise the pilot to maintain VFR and standby for clearance.

PHRASEOLOGY–
MAINTAIN V−F−R. STANDBY FOR CLEARANCE.

e. Suspend SVFR operations when necessary to comply with instructions contained in subparagraph 4−6−4b or when requested by the control facility.

PHRASEOLOGY–
SPECIAL V−F−R AUTHORIZATION DISCONTINUED. RETURN TO AIRPORT OR DEPART SURFACE AREA. ADVISE INTENTIONS.

After response:
REPORT LANDING COMPLETED/CLEAR SURFACE AREA.

4−6−3. VISIBILITY BELOW ONE MILE

a. When the ground visibility is officially reported at an airport as less than one mile, treat requests for SVFR operations at that airport by other than helicopters as follows:

NOTE–
14 CFR 91 does not prohibit helicopter SVFR flights when visibility is less than one mile.

1. Inform departing aircraft that ground visibility is less than one mile and that a clearance cannot be issued.

PHRASEOLOGY–
(Location) VISIBILITY (value). A−T−C UNABLE TO ISSUE DEPARTURE CLEARANCE.

2. Inform arriving aircraft operating outside of the surface area that ground visibility is less than one mile and, unless an emergency exists, a clearance cannot be issued.

PHRASEOLOGY–
(Location) VISIBILITY (value). A−T−C UNABLE TO ISSUE ENTRY CLEARANCE UNLESS AN EMERGENCY EXISTS.

3. Inform arriving aircraft operating within the surface area that ground visibility is less than one mile and request the pilot's intentions. Relay the pilot's response to the control facility immediately.

PHRASEOLOGY−
(Location) VISIBILITY (value). ADVISE INTENTIONS.

b. When weather conditions are not officially reported at an airport and the pilot advises the flight visibility is less than one mile, treat request for SVFR operations at that airport by other than helicopters as follows:

NOTE−
14 CFR 91 prescribes use of officially reported ground visibility as the governing ground visibility for VFR and SVFR operations at airports where it is provided and landing or takeoff flight visibility where it is not.

1. Inform departing aircraft that a clearance cannot be issued.

PHRASEOLOGY−
UNABLE TO ISSUE DEPARTURE CLEARANCE.

2. Inform arriving aircraft operating outside the surface area that unless an emergency exists, a clearance cannot be issued.

PHRASEOLOGY−
A−T−C UNABLE TO ISSUE ENTRY CLEARANCE UNLESS AN EMERGENCY EXISTS.

3. Request intentions of arriving aircraft operating within surface areas. Relay the pilot's response to the control facility immediately.

PHRASEOLOGY−
ADVISE INTENTIONS.

c. Transmit a clearance to scheduled air carrier aircraft to conduct operations if ground visibility is not less than one half mile.

d. Transmit a clearance to an aircraft to fly through surface area if the pilot reports flight visibility is at least one statute mile.

4−6−4. PREDESIGNED SPECIAL VFR CLEARANCES

Transmit predesigned SVFR clearances only during those periods authorized by the control facility.

NOTE−
The control facility may rescind this authorization at any time.

a. Apply these procedures only to aircraft equipped with a functioning two-way radio. Refer all requests for no-radio SVFR operations to the control facility.

b. Transmit clearances so that only one aircraft at a time operates in surface area unless:

1. Otherwise authorized by a letter of agreement between the control facility and the FSS.

2. A pilot requests and all pilots agree that they will maintain visual separation while operating in surface area.

PHRASEOLOGY−
MAINTAIN VISUAL SEPARATION FROM (aircraft type).

Chapter 5. Pre-Flight Services

Section 1. General

5−1−1. DESCRIPTION

Pre-flight services are those provided prior to takeoff to assist pilots in flight planning for the safe and efficient operation of aircraft. Pre-flight services may also include other air traffic−related requests over the phone. Pre-flight services include (but are not limited to):

a. Pilot briefing (includes weather and aeronautical information).

b. NOTAM delivery.

c. Flight plan handling (see Chapter 6, Section 2).

d. Weather report input including surface observations and augmentation (Alaska only), and PIREPs.

e. Clearance relay (for Alaska or MEDEVAC only for the CONUS).

f. Flight plan activation (see paragraph 6−2−6) and closure (see paragraph 6−2−13).

5−1−2. PRE-DUTY REQUIREMENTS

Before assuming pre-flight duties, specialists must familiarize themselves with meteorological and aeronautical conditions in accordance with appropriate facility directives. This includes but not limited to:

a. General locations of weather−causing systems and general weather conditions.

b. Detailed information on current and forecast weather conditions for the assigned FPA or AOR.

c. Aeronautical information (for example, NOTAMs, SUAs, TFRs, and air traffic delays).

5−1−3. UNAVAILABILITY OF INFORMATION

Use all available means to obtain the information required for a regulatory−compliant briefing. If a complete briefing cannot be provided due to circuit problems or missing data, inform the user of this fact. If known, advise the user of the time you expect the data to be available.

EXAMPLE−
"The terminal forecast for Gaithersburg is not available. A new TAF will be issued at 1140Z."
"The METAR for Talkeetna is not available. Please check back (at or after) (time)."

Section 2. Pilot Briefing

5−2−1. DESCRIPTION

Pilot briefings are the gathering, translation, interpretation, and summarization of weather and aeronautical information into a form usable by the pilot or flight supervisory personnel to assist in flight planning and decision−making for the safe and efficient operation of aircraft. These briefings may include, but are not limited to, weather observations, forecasts and aeronautical information (for example, NOTAMs, military activities, flow control information, and TFRs).

5−2−2. PILOT WEATHER BRIEFER CERTIFICATION

Flight service specialists must be certified to provide pilot briefings. Pilot weather briefer certification criteria is defined in FAA Order JO 7220.4, FAA Certification of Pilot Weather Briefer. The order details procedures and responsibilities for the FAA Pilot Weather Briefer Certification Program.

5−2−3. LOGGING BRIEFINGS

a. Briefings must be logged and retained in accordance with FAA Order 1350.14, Records Management. Briefings must be logged in operational systems when possible but may be logged manually, if needed.

b. Operational systems must, at a minimum, automatically record the facility/sector/vendor, date, position, time, and, for specialist-provided services, the specialist identification for each logged briefing. In addition, enter the following information:

1. Departure and destination.

2. Aircraft identification. The pilot's name may be substituted for the aircraft identification, if unknown.

3. Remarks, as applicable, to indicate type of briefing, and/or VNR.

c. To manually log pilot briefings, use one of the following FAA forms:

1. FAA Form 7233−2, Preflight Briefing Log. Use a separate form each day. Two or more forms may be used simultaneously at different operating positions. Complete boxes 1 through 3 on each form. Enter appropriate data in columns 4, 5, 6, 7, 8 (if pertinent), and 9. If the pilot's name is known, it may be substituted for the aircraft identification. As applicable, enter OTLK (outlook briefing), AB (abbreviated briefing), and/or VNR in column 8.

2. FAA Forms 7233−5, In-flight Contact Record, or 7230−21, Flight Progress Strip − FSS. Enter PB in block 14 if a briefing is provided. As applicable, also enter AB, OTLK, and/or VNR in the same block.

NOTE−
See Appendix C, FAA Forms.

d. Where audio recorders are used, facility management may limit entries on pilot briefing records to those required for facility use.

e. Where fast−file recorders are used and the pilot states the source of a briefing on the recorder, the source must be entered in the remarks field of the flight plan.

EXAMPLE−
PB/ENA

5−2−4. TYPE OF BRIEFING TO BE DELIVERED

a. There are three basic briefing packages:

1. *Standard*. A comprehensive briefing within six hours of departure.

2. *Abbreviated*. To update specific information as soon as practicable.

3. *Outlook*. For early planning; six hours or more before flight.

b. Provide the pilot with the type of briefing requested (standard, abbreviated, or outlook).

1. When it is not clear which type briefing is desired, provide the items requested and then determine if the pilot would like a standard briefing.

2. If a standard briefing is requested, conduct the briefing in accordance with paragraph 5−2−5.

3. If the pilot does not request a standard briefing, provide either an abbreviated briefing in accordance with paragraph 5−2−6 or an outlook briefing in accordance with paragraph 5−2−7.

NOTE−
1. *Systems providing automated briefing services may offer a variety of alternative briefing options such as email, interactive maps, video, mobile applications, etc. These alternative briefings must meet or exceed the requirements in paragraphs 5−2−5 to 5−2−7.*

2. *Systems providing unmanned aircraft briefing services must provide briefings in accordance with the regulations applicable to the operations.*

5−2−5. DELIVERY OF STANDARD BRIEFINGS

Standard briefings provide a complete and detailed depiction of the weather elements and aeronautical information for the intended flight. A standard briefing may be obtained within six hours of estimated time of departure (ETD) and may be requested multiple times for flights during dynamic weather.

a. Background information. Obtain the following information if not evident or already known:

1. Type of flight planned (VFR or IFR).

2. Aircraft identification or pilot's name; for pre-stored profiles, confirm aircraft identification and pilot's name.

3. Aircraft type.

4. Departure point.

5. Route of flight.

6. Destination.

7. Flight altitude(s).

8. ETD and estimated time en route (ETE).

NOTE−
Automated systems may provide specialists with background information saved on a pre-stored profile or master flight plan. Common sense and good judgment will determine the extent of verification needed to ensure the most expeditious and complete service.

b. International cautionary advisory. Issue the following advisory for briefings with international departures, arrivals, or routes of flight. This advisory may be omitted if the pilot advises it has been received or the system indicates the pilot has opted out of receiving the statement.

PHRASEOLOGY−
CHECK DATA AS SOON AS PRACTICAL AFTER ENTERING FOREIGN AIRSPACE, AS OUR INTERNATIONAL DATA MAY BE INACCURATE OR INCOMPLETE.

NOTE−
Automated systems may provide pilots with the preference to opt-out from receiving this statement by pilots acknowledging they have read and understood the advisory.

c. Using all available sources of weather and aeronautical information, provide the following data as applicable to the proposed flight. Provide the information in subparagraphs c1 through c11 in the sequence listed, if known, except as noted.

1. Adverse conditions.

(a) Include this element when meteorological or aeronautical conditions are reported or forecast that may influence the pilot to alter the proposed flight.

(b) Emphasize conditions that are particularly significant, such as:

(1) Low-level wind shear.

(2) Density altitude.

(3) Thunderstorms.

(4) Icing.

(5) Frontal zones along the route of flight.

(6) Adverse NOTAMs (for example, airport/runway closures, air traffic delays, TFRs, or special flight rules areas [SFRA]).

NOTE−
This list only provides examples of conditions that may influence the pilot to alter the proposed flight and should not be considered all-inclusive.

(c) Weather advisories must include the type of advisory (for example, G−AIRMET, SIGMET, or CWA) followed by the pertinent information, regardless of delivery method (for example, specialist−provided or automated).

(d) Include urgent PIREPs (UUA) when appropriate.

NOTE−
1. *Common sense and good judgment will determine if a UUA is appropriate for a particular briefing. For example, a report for low-level wind shear with airspeed fluctuations of 10 knots is significant for the pilot of a light aircraft but not to the pilot of a heavy aircraft).*

2. *A catalog of resources can be found in Chapter 5, Section 3, Briefing Display.*

2. VFR Flight Not Recommended (VNR).

(a) Specialists must include this statement when VFR flight is proposed and sky conditions or visibilities are reported or forecast, surface or aloft, that, in your judgment, would make flight under VFR doubtful.

NOTE−
This statement is an advisory. The decision as to whether the flight can be conducted safely rests solely with the pilot.

(b) This element should not be provided as a blanket statement when the reported conditions, forecast, and/or trends, do not support it.

(c) This element may be provided at the beginning of the briefing or combined with the applicable adverse conditions for emphasis.

(d) A description of the conditions, affected locations, and times must be included to provide justification, clarity, and mutual understanding.

(e) Automated systems may include this statement when the system identifies one or more conditions that would make flight under VFR uncertain.

PHRASEOLOGY−
V−F−R FLIGHT NOT RECOMMENDED (location if applicable) DUE TO (conditions)
or
V−F−R NOT RECOMMENDED (location if applicable) DUE TO (conditions)

EXAMPLE−
"There are low ceilings along the entire route between niner hundred and one thousand feet. With the approach of a cold front, these clouds are forecast to become overcast and lower to below seven hundred feet. Mountains and passes are obscured. V−F−R flight not recommended between Salt Lake City and Grand Junction after two two zero zero Zulu."
"V−F−R flight not recommended in the Kenai area until early afternoon. The current weather at Kenai is indefinite ceiling three hundred, visibility one, mist, and little improvement is expected before one eight zero zero Zulu."

3. Check Density Altitude.

(a) Include this statement when flight is proposed to depart from and/or land at an airport with field elevations of 2,000 feet MSL or higher and temperatures, present or forecast, meet the criteria contained in TBL 5−2−1.

(b) Upon request, provide approximate density altitude data.

PHRASEOLOGY−
CHECK DENSITY ALTITUDE

NOTE−
This statement is only an advisory and the decision as to whether the flight can be conducted safely rests solely with the pilot.

TBL 5−2−1
Density Altitude

Field Elevation	Temperature (C)
2,000−2,999	29 degrees or higher
3,000−3,999	27 degrees or higher
4,000−4,999	24 degrees or higher
5,000−5,999	21 degrees or higher
6,000−6,999	18 degrees or higher
7,000−higher	16 degrees or higher

4. Synopsis.

(a) Provide a brief statement describing the type, location, and movement of weather systems and/or air masses that might affect the proposed flight.

(b) Automated systems may deliver the information using graphics.

(c) This element may be combined with adverse conditions and/or the VNR element, in any order, when it will help describe the conditions.

NOTE−
A catalog of resources can be found in Chapter 5, Section 3, Briefing Display.

5. Current conditions.

(a) Summarize from all available sources reported weather conditions applicable to the flight including but not limited to: departure airport reports (for example, aviation routine weather reports [METAR], weather camera analysis, etc.), PIREPs, clouds, visibilities, and precipitation.

(b) Emphasize information that confirms or refutes weather advisories.

(c) This element may be omitted, with pilot's concurrence, if the proposed time of departure is beyond two hours, or if requested by the pilot.

(d) Automated systems may deliver the information using a variety of methods (for example, graphics, text, or dynamic displays).

NOTE−
A catalog of resources can be found in Chapter 5, Section 3, Briefing Display.

6. Forecast.

(a) Summarize from all available sources forecast information applicable to the proposed route and altitude(s) including but not limited to departure airport forecast and area forecast (graphical or textual based on the location), if in the briefer's judgment, it provides a better picture, clouds, visibilities, icing, turbulence, and precipitation.

(b) Provide the forecast wind in knots and degrees referenced to true north, and provide temperatures in degrees Fahrenheit. Interpolate wind directions and speeds between levels and stations as necessary.

NOTE–
Forecast winds aloft temperatures may be omitted if, in the briefer's assessment, they do not have an impact on the safety of the flight.

(c) Provide the destination forecast, including significant changes expected within one hour before and after the ETA.

(d) Provide trends that confirm or refute weather advisories.

(e) Provide the information in a logical order: departure, climb out, en route, descent, and arrival.

NOTE–
A catalog of resources can be found in Chapter 5, Section 3, Briefing Display.

7. NOTAMs.

(a) Provide pertinent NOTAMs for the departure, en route, and destination including those for special activity airspace (SAA) such as restricted areas, aerial refueling tracks and anchors, and lights out/night vision goggle operations.

NOTE–
Other SAA NOTAMs such as military operations areas (MOA), warning areas, and military training routes are considered "upon request" briefing items.

(b) Combine this element with adverse conditions when it might influence the pilot to alter the proposed flight (for example, airport/runway closures, air traffic delays, and TFRs).

8. Prohibited areas P−40, P−56, and the SFRA for Washington, DC. Include this element when pertinent to the route of flight. Advise the pilot that VFR flight within 60 miles of the DCA VOR/DME requires special awareness training, unless the pilot advises they are aware of the requirement or the system indicates the pilot has opted out of receiving the advisory.

NOTE–
1. *Automated systems may provide pilots with the preference to opt-out from receiving this statement by pilots acknowledging they have read and understood the advisory.*

2. *Refer to 14 CFR 91.161 and 14 CFR 93 for additional information including special awareness for flights in and around SFRAs and/or areas that require special air traffic rules.*

9. ATC delays. Inform the pilot of ATC delays and/or flow control advisories that might affect the proposed flight.

10. Solicitation of PIREPs. Request a report when in your judgment, a report of actual in-flight conditions is beneficial or when conditions meet criteria for solicitation of PIREPs (see Chapter 8, Section 1).

(a) This element should not be provided as a generic statement.

(b) To the extent possible, the solicitation should be accompanied by a specific request.

EXAMPLE–
"Please give us a pilot report regarding the forecast mountain obscuration through the Pass."
"Pilot reports are requested for icing conditions near Grand Forks."
"If able, please provide a pilot report about bases and tops in the vicinity of Atlanta De Kalb-Peachtree airport."

(c) Advise pilots they may contact an FSS to report en route conditions.

11. Upon Request. Provide any information requested by the pilot, if available (for example, approximate density altitude data, customs/immigration procedures, ADIZ rules, other published information, FDC NOTAMs, and military NOTAMs).

5−2−6. DELIVERY OF ABBREVIATED BRIEFINGS

Abbreviated briefings emphasize the more dynamic briefing elements that may have changed since a standard briefing was obtained. It helps the users focus on specific risk areas for the intended flight in an efficient manner and allows users to be proactive in reacting to changing conditions while in-flight.

a. Obtain background information in accordance with subparagraph 5−2−5a.

b. If applicable, issue the international cautionary advisory in accordance with subparagraph 5−2−5b.

c. When a pilot desires specific information, only provide the requested information. If adverse conditions are reported or forecast, advise the pilot. At the pilot's request, provide details on these conditions, in accordance with subparagraphs 5−2−5c1–c3.

d. When a pilot requests an update to a previous briefing, obtain from the pilot the time the briefing was received if not evident or already known. To the extent possible, limit the briefing to appreciable changes in meteorological and aeronautical conditions since the previous briefing. Provide the information in the sequence listed in paragraph 5−2−5.

e. When a pilot requests to file a flight plan only, and adverse conditions are reported of forecast for the proposed route, ask if the pilot requires the information. If requested, provide details on these conditions, in accordance with subparagraph 5−2−5c1–c3).

f. Solicit PIREPs in accordance with subparagraph 5−2−5c10.

NOTE−
Automated systems may provide a variety of options for pilots to obtain updates such as adverse conditions alerting capabilities, text messages, or interactive displays, etc.

5−2−7. DELIVERY OF OUTLOOK BRIEFINGS

Outlook briefings provide a general indication of which elements may be a factor during a flight and should only be used during planning six hours or more from the ETD.

a. Conduct the briefing in accordance with paragraph 5−2−5. Omit items in subparagraphs c2, c3, c5, and c6(b) through c10, unless specifically requested by the pilot or deemed pertinent by the specialist.

b. When the proposed flight is scheduled to be conducted beyond the valid time of the available forecast data, provide a general outlook and then advise the pilot when complete forecast data will be available for the proposed flight.

NOTE−
Automated systems may provide a variety of options for pilots to obtain forecast data beyond six hours from ETD such as interactive displays, text summaries, etc.

Section 3. Briefing Display

5−3−1. GENERAL

Flight service increases aviation safety by making aeronautical and meteorological information accessible to its users. Whether the user chooses a self−assisted method or to consult a flight service specialist, the goal is to provide the tools required to make informed decisions about conducting a safe flight. This is accomplished by leveraging advanced technologies to safely and efficiently deliver the information.

All flight−related decisions must be based on all available pertinent information. In a briefing, the information should be prioritized to support natural understanding that leads to better planning, interpretation, and risk identification and mitigation. Each element has a specific purpose that provides the user with reported, analyzed, or forecast conditions either at an airport or en route.

a. Facilities must provide a briefing display for specialist and pilot/flight supervisory personnel (for example, web portal) use. The contents and method of specialist's display must be based on individual facility requirements (for example, available equipment and space). At the discretion of facility management, provide a separate display for pilot use.

b. Briefing displays must provide all the critical information that delivers a comprehensive picture of the conditions that may affect a planned flight.

c. The contents and methods of all displays must meet contractual requirements.

d. To the extent possible, all materials in all displays must be current. When displaying non-current or stale data, it must be clearly identified as such (for example, red box or banner).

e. As every flight is unique and the conditions for that flight may vary hour by hour, day to day, multiple sources may be necessary to meet regulatory requirements.

f. The sources and formats of weather and aeronautical information may vary and are subject to change in the future as the data is modernized.

g. Information and/or legacy products scheduled to be discontinued should be removed from the display, as soon as practicable, upon receipt of notice of the discontinuance.

h. Information and/or products scheduled to be updated to a new format (for example, from traditional alphanumeric coding [TAC] to extensible markup language [XML], or from TAC to gridded data) should be transitioned to the new format as soon as practicable, upon receipt of notice of the update.

5−3−2. AVIATION WEATHER INFORMATION

a. The suite of available aviation weather information is expanding, with the development of new sensor systems, algorithms, and forecast models. The FAA has identified three distinct types of weather information available to pilots and operators.

1. Observations. Raw weather data collected by some type of sensor suite including surface and airborne observations, radar, lightning, satellite imagery, and profilers. Observations are also reports collected by human observers, including PIREPs.

2. Analysis. Enhanced depiction and/or interpretation of observed weather data.

3. Forecasts. Predictions of the development and/or movement of weather phenomena based on meteorological observations and various mathematical models.

REFERENCE−
AIM, Para 7−1−3, Use of Aviation Weather Products.

b. All three types of weather information may be displayed in more than one way. For example:

1. METAR or TAFs may be presented in its legacy code format, plain text, or a color−coded point−and−click icon with a pop−up.

2. Synoptic information such as fronts, pressure centers, etc. may be shown as charts or georeferenced features.

3. Icing and turbulence analyses, model data, and aviation forecasts may be depicted as static images or as dynamic/interactive displays that users can pan and zoom to focus on areas of greatest interest.

NOTE−
Providers should select the best source and format that meet the requirements of their contracts and briefing displays.

5−3−3. WEATHER INFORMATION ESSENTIALS

The following paragraphs are a high-level overview of aviation weather information and products essential to deliver a complete pilot weather briefing and does not attempt to capture all information, products, and elements available. Specific products marked in *italics* must be provided, **if available** from the source.

NOTE−
Descriptions of aviation weather information and products can be found in the FAA Aviation Weather Handbook. The handbook discusses and explains the most commonly used weather information/products and was designed as a technical reference for all who operate in the NAS.

a. Adverse Weather Conditions. Adverse weather are conditions reported or forecast that might influence the operator to alter the proposed flight.

1. It is essential to emphasize conditions that are particularly significant, such as:

(a) IFR.

(b) Mountain obscurations.

(c) Thunderstorms.

(d) Icing.

(e) Turbulence.

(f) Volcanic ash.

(g) Dust/Sand storms.

(h) Tropical cyclones.

(i) Density altitude.

(j) Low-level wind shear.

(k) Strong low-level winds.

(l) Mountain waves.

2. Examples of weather products containing adverse conditions information:

(a) Weather advisories. Weather advisories must include the type of advisory (for example, AIRMET, G−AIRMET, SIGMET, or CWA) followed by the pertinent information, regardless of delivery method (specialist−provided or automated).

(1) *AIRMETs.*

NOTE−
The term AIRMET is inclusive of the TAC AIRMET (that is, the legacy AIRMET) and the G−AIRMET.

(2) *Alert severe weather watch bulletins.*

(3) *Aviation watch notification messages (SAW).*

(4) *CWAs.*

(5) *C−SIGMETs.*

(6) *Convective outlooks.*

(7) *Hurricane advisories (WH).*

(8) *Severe weather watches (WW).*

(9) *SIGMETs.*

(10) *Tropical cyclone advisories (TCA).*

(11) *Volcanic ash advisories (VAA).*

(b) Weather analysis.

(1) Ceiling and visibility (C&V) analysis (for example, Localized Aviation Model Output Statistics Program [LAMP] data).

(2) Icing severity and super large droplets (for example, current icing product [CIP] and forecast icing product [FIP]).

(3) Freezing level analysis.

(4) Traffic flow management convective forecast (TCF).

(5) Turbulence intensity.

[a] Graphical turbulence guidance (GTG) for clear air turbulence (CAT).

[b] GTG CAT forecast.

[c] GTG for turbulence from mountain wave activity (MTW).

[d] GTG MTW forecast.

b. Synopsis. The synopsis summarizes atmospheric conditions over a wide area at a given time. Flight service specialists often use this information during pre-duty familiarization. Using data from a variety of sources, a synopsis provides an overview of the conditions including the behavior and movement of weather formations that might affect flights now and in the future. Examples of synoptic information:

1. C&V analysis (for example, LAMP data).

2. Current flight rules category analysis.

3. Deterministic forecasts (for example, CoSPA).

4. Freezing level analysis.

5. Significant weather (SIGWX) forecasts.

6. Surface analysis.

c. Current (latest) conditions. Current (latest) conditions are observations, not forecasts. Briefing displays must provide those applicable to the time and route of flight and emphasize information that confirms or refutes weather advisories. Examples of current (latest) conditions information include but are not limited to:

1. *AIREPs.*

2. *SPECIs.*

3. Icing severity and super large droplets (for example, CIP).

4. Lightning data.

5. *METARs* **–** If AUTO appears after the date/time element and is presented as a singular report, “AUTO” or “AUTOMATED” must be included.

6. *PIREPs.*

7. *Radar information.*

(a) Echo tops.

(b) National and regional mosaics.

(c) Precipitation categories (rain, mix, snow) including mosaics and recent loops.

(d) Reflectivity (base, composite) including mosaics and recent loops.

(e) Summary (storm tops, movement [direction and speed], development).

(f) Velocity azimuth display (VAD) wind profile.

8. *Satellite images.*

(a) Infrared.

(b) Visible.

9. *Turbulence intensity* (for example, GTG for CAT and GTG for MTW).

10. Visual weather observation system(s) information.

11. Volcanic ash reports.

12. *Weather camera information.*

(a) *Images.*

(b) Visibility estimation through image analytics.

d. Forecast. Forecasts are the product of models or analyses. Flight service briefing displays must provide forecasts applicable to the time and proposed route and altitude and only use weather forecasts, warnings, and advisories issued by a NWS office, including CWSUs, the U.S. military, foreign governments, or graphics systems owned/leased by the FAA or provided through an FAA-contracted service provider. Examples of en route forecast information include but are not limited to:

1. *Area forecasts, where available.*

2. Aviation forecast discussions (AFD).

3. Convective outlooks.

4. Categorical outlooks.

5. Deterministic forecasts (for example, CoSPA).

6. *Graphical forecasts for aviation (GFA).*

7. *Freezing level analysis.*

8. *Icing severity* (for example, FIP).

9. Maximum and minimum temperature forecasts.

10. Meteorological impact statements.

11. SAW.

12. SIGWX forecasts.

13. *TAFs.*

14. TCF.

15. *Tropical cyclone charts.*

16. *Turbulence intensity* (for example, GTG CAT forecast and GTG MTW forecast).

17. Upper air forecasts.

18. *Winds and temperatures aloft.*

e. Weather Features and Common Symbols. Weather features and common symbols may appear on charts and, in some instances, may be obtained as georeferenced features. The most common weather features and chart symbols can be found in the FAA Aviation Weather Handbook, Chapter 25, Analysis.

5−3−4. AERONAUTICAL INFORMATION

a. Aeronautical information is an overarching term that describes some of the critical information required for safe operation of the NAS.

b. Due to the critical impact of aeronautical information on safety and flight operations, briefing displays must be accurate, complete, consistent, configuration−managed, and secure.

c. Briefing displays must provide the source data necessary for common situational awareness among users about flight constraints, airports, airspaces, and obstructions.

5−3−5. AERONAUTICAL INFORMATION ESSENTIALS

The following is a high−level list of aeronautical information essential to deliver a complete pilot weather briefing and does not attempt to capture all information, products, and elements available.

a. Aerodrome/Airport information.

1. Traffic patterns.

2. Fixed−based operator (FBO) information.

3. Phone and contact numbers for air traffic control.

4. Available services.

5. Airport configuration.

(a) Runways.

(b) Taxiways.

(c) Geospatial information.

b. Electronic charts.

1. SIDs.

2. STARs.

3. IFR en route charts (low- and high-altitude).

4. VFR sectionals and terminal area charts.

c. Controlled airspace.

d. Points and NAVAIDs.

1. Waypoints.

2. Fixes.

3. Frequencies.

e. Airspace restrictions.

1. Prohibited areas.

2. Restricted areas.

3. Warning areas.

f. SAAs

1. Aerial refueling tracks and anchors.

2. Military visual routes (VR).

3. Military instrument routes (IR).

4. Military operations areas (MOA).

5. Lights out/night vision goggle operations.

g. SFRAs.

h. TFRs.

i. NOTAMs.

j. Obstructions.

1. Towers.

2. Cranes.

3. Stacks.

4. Wind turbines.

k. Procedures.

1. SIDs.

2. STARs.

3. Obstacle departure procedures.

4. Instrument approach procedures.

5. Charted visual approach procedures.

Chapter 6. Flight Data Services

Section 1. General

6–1–1. DESCRIPTION

The primary task of the flight data position is information management. Flight data services include the development, translation, processing, and coordination of aeronautical, meteorological, and aviation information. Flight service specialists performing flight data duties are responsible for:

a. The initiation and completion of SAR for aircraft on overdue VFR flights (see Chapter 3, Section 4) and assisting other ATC facilities as needed for SAR involving overdue IFR flights.

b. Conducting intra-facility and inter-facility coordination.

c. Forwarding departures, progress reports, and arrival reports to ATC upon request.

d. Compilation, evaluation, recording, and dissemination of data.

e. Managing outbound traffic as required.

f. Revising flight data as necessary.

g. Correctly formatting and editing flight data messages.

6–1–2. RECORDING FLIGHT DATA INFORMATION

a. Record all actions taken in the provision of flight data services in the operational system.

1. Flight plans and related messages.

NOTE–
FSS operational systems contain an electronic equivalent of authorized FAA flight plan forms.

2. Service A/B messages.

3. ATC clearances.

4. Weather and flight data messages.

5. NOTAMs.

6. Other operationally significant actions.

b. Locally approved procedures may be used to manually record data during heavy traffic periods or system outages and should be logged in the operational system as soon as practicable.

c. Use control/clearance symbols, abbreviations, location identifiers, and contractions for recording position reports, traffic clearances, and other data.

d. When recording data you may use:

1. Plain language to supplement data when it will aid in understanding the recorded information.

2. Locally approved contractions and identifiers for frequently used terms and local fixes not listed in either FAA Order JO 7340.2, Contractions, or FAA Order JO 7350.9, Location Identifiers. Use only within your facility, not on data or interphone circuits. All locally approved contractions and identifiers must be placed in facility files for record and reference purposes.

e. When recording data manually, use the standard hand–printed characters shown in TBL 4–1–3 to prevent misinterpretation.

1. To correct or update data, draw a horizontal line through it and write the correct information adjacent to it.

2. Do not erase any item.

6−1−3. PART-TIME FSS CLOSURE ACTION

Part-time facilities must forward the following information to the designated guard FSS.

a. Inbound flights − all information.

b. Outbound flights − VFR and IFR flight plan data when proposed departure time and/or ETA is within the period from one hour prior to closing until one hour after opening.

c. All other pertinent information (for example, NOTAMs and pending outages).

6−1−4. TELEPHONE REQUESTS FOR ATC CLEARANCES

a. When a telephone request for an ATC clearance is received, positively verify the departure location by airport name or location identifier, and the city name and state.

NOTE−
1. *Verification of the departure location may prevent a critical safety situation involving similar or identical airport or city names possibly located in different states.*

2. *City refers to a city, town, village, or publicly recognized place.*

b. Pilots departing from a non−towered airport on an IFR flight plan in the CONUS should be directed to consult the Chart Supplement U.S. to determine the frequency or telephone number to use to contact clearance delivery.

NOTE−
Air traffic facilities providing clearance delivery services via telephone will have their telephone number published in the Chart Supplement U.S. of that airport's entry. This same section may also contain a telephone number to use for cancellation of an IFR flight plan after landing.

c. Pilots of MEDEVAC flights in the CONUS may obtain a clearance by calling (877) 543−4733.

d. In Alaska, pilots may obtain a clearance via telephone.

e. Refer to FAA Order JO 7110.10, paragraph 4−2−7, ATC Clearances, Advisories, or Requests, for guidance on relaying ATC clearances.

6−1−5. COMMUNICATIONS SERVICES

Most flight movement data exchanged outside of the facility is processed by automated systems such as NADIN. It is important to adhere to strict format and procedures during normal operations as well as system interruption periods.

a. Circuit interruption notifications should be as follows:

1. Consult your operational system handbook and standard operating procedures for detailed instructions regarding circuit interruption notification procedures.

2. Notify any guarding facility/sector, the AISR customer service center, and NADIN.

b. All outage reports should refer to the correct circuit and/or equipment identification numbers. Facilities should obtain and record ticket numbers provided by AISR or the TELCO authority.

c. WMSCR and NADIN: contact the FAA NEMC at (855) 322−6362 (FAA−NEMC).

1. For ATLANTA (KATLYTYX), press 1;

2. For SALT LAKE CITY (KSLCYTYX), press 2.

d. AISR help desk: (866) 466−1336.

6−1−6. TYPES OF ACCEPTABLE DATA

The following are the types or messages currently accepted by FAA data communication systems.

a. Distress messages.

b. Messages concerning safety to human life.

c. Flight movement/control/safety messages.

d. Aviation meteorological observations/forecasts/warnings.

e. Administrative messages which pertain to FAA personnel, facilities, or property.

f. NOTAM data.

6−1−7. PRIORITY MESSAGES

TBL 6−1−1 shows priorities based on message type and the action required for each.

TBL 6−1−1
Priority Messages

Priority	Message Type	Action Required
SS	Involves safety of life or property. Restricted to emergency situations.	Transmit immediately to all addressees and deliver to all internal/external offices you are responsible for.
DD	Priority operational and circuit control data.	Same as above.
FF on local agreements	Flight movement and control data relating safe/efficient operation of aircraft. Also for administrative data of a directive nature.	Transmit immediately, make internal/external delivery during next available administrative work day, if office is closed. Delivery may be required to duty officer, dependent.
GG	Meteorological, NOTAM and routine administrative data.	Transmit immediately, make internal/external delivery by 10:30 a.m. of the next business day.

6−1−8. GROUP CODES

a. NADIN has established group codes to allow message originators to input a single address, which will result in dissemination to a selected number of facilities.

b. System-wide group codes have been established for the primary use of RWA/KRWAYAYX and the ATCSCC (KCFCZDZX). These codes are KDOMYFYX and KDOMYYYX respectively.

c. A group code has also been established for each regional office and ARTCC primarily for the issuance of regional office notices (RENOT) and all ARTCC instructions. They are as follows for regional offices in TBL 6−1−2 and ARTCCs in TBL 6−1−3.

TBL 6−1−2
Region Group Code

Region	ID
Alaska	PANCYGYX
Central	XKC
Eastern	XNY
Great Lakes	XGC
New England	XBW
Northwest Mountain	XST
Southern	XTL
Southwest	XFE
Western‐Pacific	XLA

TBL 6−1−3
ARTCC Group Code

ARTCC	ID
Albuquerque	XXI
Atlanta	XXN
Boston	XXU
Chicago	XXC
Cleveland	XXD
Denver	XXO
Ft. Worth	XXJ
Houston	XXH
Indianapolis	XXA
Jacksonville	XXK
Kansas City	XXS
Los Angeles	XXF
Memphis	XXM
Miami	XXL
Minneapolis	XXE
New York	XXR
Oakland	XXG
Salt Lake City	XXP
Seattle	XXT
Washington	XXQ

NOTE−
Except in Alaska, all of the group codes can be converted to a full eight-character address by placing a K in front of the group code and YFYX following the three characters listed in TBL 6−1−2 and TBL 6−1−3.

d. In addition, a group code, KFSSYFYX, was established for the CONUS.

e. Using a group code, the operational system automatically transmits all VFR flight plans to the Drug Enforcement Administration in addition to the destination at the time of activation.

NOTE−
All filed flight plans, as well as all logged in-flight, pre-flight and contact briefings, are routed through NAS Defense Program, which is responsible for forwarding to the AMOC using the address KRIVYYYX. These transmissions are transparent.

f. The group code KSARYCYX has been established to assist in the processing of INREQs and ALNOTs.

6−1−9. MESSAGE FORMATS

a. Specialists should follow the transmit formats defined for the operational system in use. Failure to comply can result in the message being rejected by either NADIN or WMSCR. This may result in non-delivery to the intended recipients.

b. Full keyboard punctuation is allowed on all messages destined for internal FAA, DoD, and NWS dissemination. For international dissemination, punctuation should be limited to those characters identified in pertinent ICAO documents.

c. Contractions and abbreviations should be used to shorten data transmissions to the extent possible. In no case should one be used that is not documented in FAA Order JO 7340.2, Contractions. For international communications, be aware that the foreign correspondent may not understand all FAA contractions and may not have a full command of the English language. Care should be exercised in international communications to avoid slang phrases and non-ICAO approved abbreviations.

d. The operational system can obtain weather or aeronautical information, including WMO collectives, by request/reply for data not stored in the system. Specific examples can be found in each operational system user guide.

6−1−10. WMSCR NEGATIVE RESPONSE MESSAGES

a. WMSCR automatically generates a negative response to request/reply inputs for which it cannot deliver.

1. *NO REPORT AVBL*. This response means the current data has not been received by WMSCR.

2. *NOT IN SYSTEM*. This response means WMSCR does not receive and store the requested data.

3. *INVALID FORMAT*. This response means the computer cannot process the request because of an input error.

b. WMSCR will generate only one negative response message to a request/reply transmission that requests multiple reports and only when none of the data requested can be delivered.

6−1−11. Q SIGNALS

Q signals are shortened forms of communication used to request or transmit information. TBL 6−1−4 (followed by the letter Q when it is a question), their meanings, and required answers.

TBL 6-1-4
Q Signals

Signal	Meaning	Answer
QAL	Has aircraft… landed at your location (or at…)?	Aircraft… landed here at… hours (or landed… at… hours).
QRU	Have you anything for me [or for… (location or person)]?	I have nothing for you [or for… (location or person)].
QSL	Can you acknowledge receipt of transmission number… (or type of message)?	I acknowledge receipt of transmission number… (or type of message).
QSM	Shall I repeat the last message (transmission or portion indicated sent to me or transmission(s) from…)?	Repeat the last message (transmission or portion indicated) sent to me (or transmission(s) from…). A−−not received. B−−partially received (garbled).
QTA	Shall I cancel message number… (or other identification)?	Cancel message number… (or other identification.

EXAMPLE−

Message	*Meaning*
QALQ N677JA	Has N677JA landed at your location?
QAL N677JA CHS 1744Z	N677JA landed at CHS at 1744Z.

Section 2. Flight Plan Handling

6−2−1. FLIGHT PLAN RECORDING

a. Use the operational system to record and file flight plans, flight plan modifications, cancellations, activations, and closures for appropriate distribution and processing.

b. Locally approved procedures may be used to manually record flight plans prior to entry into the operational system during heavy traffic periods or system outages.

c. Record flight plans on the appropriate flight plan form or electronic equivalent.

1. Civilian flight plans consist of the information requested on FAA Form 7233−4 (or Form 7233−1 for stereo routes) or an electronic equivalent. For IFR flight plans, all items except Item 19 are transmitted to the ARTCC as part of the IFR flight plan proposal. Item 19 information is retained by the service that filed the flight plan and made available to ATC upon request.

2. Department of Defense (DoD)/military flight plans and civilian stereo route flight plans can still be filed using FAA Form 7233−1, or electronic equivalent.

3. Where FAA Form 7233−1, Flight Plan, and FAA Form 7233−4, International Flight Plan, are referenced, DoD use of the equivalent DoD forms 175 and 1801, respectively, is implied and acceptable.

4. Within U.S. controlled airspace, FAA Form 7233−1, Flight Plan, may be used by filers of DoD/military flight plans and civilian stereo route flight plans.

5. The international flight plan format is mandatory for:

(a) Any flight plan filed, with the exception of DoD flight plans and civilian stereo route flight plans, which can still be filed using the format prescribed in FAA Form 7233−1, Flight Plan.

NOTE−
DoD Form DD−175 and FAA Form 7233−1 are considered to follow the same format.

(b) Any flight that will depart U.S. domestic airspace. For DoD flight plan purposes, offshore warning areas may use FAA Form 7233−1 or military equivalent.

(c) Any flight requesting routing that requires performance based navigation.

(d) Any flight requesting services that require filing of capabilities only supported in the international flight plan.

6. For flight plans with RNAV routes in domestic U.S. airspace, use FAA Form 7233−4, International Flight Plan, and use the following guidelines for pilots filing flight plans in domestic U.S. airspace if automatic assignment of any of the following RNAV routes are desired:

(a) RNAV SID;

(b) RNAV STAR; and/or

(c) RNAV point-to-point.

NOTE−
1. *The instructions for flight plan completion are addressed in Appendix A, FAA Form 7233−4, International Flight Plan, or Appendix B, FAA Form 7233−1, Flight Plan.*

2. *FSS operational systems contain an electronic equivalent of authorized FAA Flight Plan Forms; detailed instructions are included in each system's operational manual.*

d. Completion of all items or fields is not required in every case, and all items filed are not always transmitted. For example, flight plan data received from an operations office may be limited to only those items required for ATC or SAR purposes, provided the operations office obtains complete information on the flight.

e. Use authorized abbreviations where possible.

f. For domestic flights, accept flight plans regardless of departure point within the NAS.

1. Insert the originator of the flight plan into Item 18 of the FPL following the indicator ORGN/.

2. Forward complete VFR flight plan proposals to the tie−in facility/sector for the departure and destination points. A complete VFR flight plan for civilian flights includes FAA Form 7233−4 Item 19 Supplemental Information sent in a separate SPL message.

NOTE−
FPL and SPL message formats may be found in Appendix D, Service B Message Formats.

g. Accept military flight plan proposals, cancellations, and closures from any source.

NOTE−
Part-time operations offices must provide complete information in the event it is needed for SAR purposes.

h. Advise pilots, as appropriate, on the following:

1. Identify the tie-in station for the departure point, and advise the pilot to report departure time directly to that facility.

2. When a departure report is unlikely because of inadequate communications capability, advise the pilot that the flight plan will be activated using the proposed departure time as the actual departure time. Include "ASMD DEP" in remarks. The pilot is responsible for closing, cancelling, or extending the flight plan if the flight is canceled or delayed.

3. Determine the flight plan area in which the destination is located. Request the pilot close the flight plan with the tie-in facility. Provide the pilot the tie−in facility/sector contact information upon request.

4. Recommend that a separate flight plan be filed for each leg of a VFR flight.

5. Request the pilot inform FSS whenever the filed time en route changes more than 30 minutes.

6. On return flights from remote areas, such as a fishing site, establish a mutually acceptable date/time with the pilot for alerting SAR.

7. When a pilot files to an airport served by a part−time FSS and the ETA is during the period the facility is closed, ask the pilot to close with the associated FSS, identified in FAA Order JO 7350.9, Location Identifiers, and the Chart Supplement.

8. Upon request, inform pilots filing IFR flight plans of the appropriate and most effective means of obtaining IFR departure clearances.

9. When a pilot files a DVFR flight plan, advise the pilot to activate with an FSS. Also advise the pilot that a discrete beacon code will be assigned upon activation.

NOTE−
1. *A discrete beacon code may be assigned when the flight plan is filed, as necessary. If the pilot wants to file a DVFR flight plan that departs outside the facility's flight plan area, provide the applicable toll−free number for the departure FSS.*

2. *Discrete beacon codes are assigned to facilities in accordance with FAA Order JO 7110.66, National Beacon Code Allocation Plan (NBCAP).*

6−2−2. NOTIFYING ARTCC

a. Transmit flight plans and flight plan amendments to the ARTCC for the departure point.

b. Facilities should use FAA Order JO 7350.9, Location Identifiers, or the appropriate aeronautical charts to determine the ARTCC to which each transmission must be made.

c. Transmit flight plans (if necessary) and flight plan amendments via interphone to the flight data position (error referral position) or departure sector when the aircraft's proposed departure time is within the parameters listed in TBL 6−2−1.

TBL 6–2–1
ARTCC Flight Plan Times

ARTCC	Filer Lockout Time (Minutes)	Flight Plan Deletion Time[1] (Minutes)
Albuquerque	46	120
Anchorage	43	90
Atlanta	46	120
Boston	55	120
Chicago	46	120
Cleveland	46	120
Denver	46	180
Fort Worth	46	180
Guam (OFDPS)	Manual Coordination[2]	120
Honolulu (OFDPS)	Manual Coordination[2]	120
Houston	46	120
Indianapolis	61	240
Jacksonville	46	120
Kansas City	46	120
Los Angeles	46	120
Memphis	46	120
Miami	46	120
Minneapolis	46	120
New York	61	121
Oakland	46	120
Salt Lake City	46	120
San Juan[3]	46	120
Seattle	46	120
Washington	46	120

[1] Following proposed departure time.
[2] Electronic amendments are not accepted; manual coordination is required.
[3] Flight plans with San Juan ARTCC are processed via Miami ARTCC's flight data processor.

d. Advise the ARTCC's departure sector or flight data position (error referral position), via interphone, when a message is received indicating ineligibility or a response is not received via data terminal within 10 minutes.

e. Flight plans are automatically deleted if no action is taken within the time limits listed in TBL 6–2–1. Transmit flight plans as follows:

1. When multiple (two or more) flight plans are received from the same aircraft, or for flight plans which propose alternating VFR and IFR, stopover, or terminal area delay, the station receiving the flight plans transmits separate flight plans to the appropriate ARTCCs for each IFR portion or segment.

2. Transmit flight plans specifying special use airspace delays (MOAs, warning areas, restricted areas, ATCAA) as in subparagraph 6–2–2e1 except when letters of agreement specify otherwise.

3. Aerial refueling delays, or any other en route delays not covered in subparagraphs 6–2–2e1 or 6–2–2e2 and not involving a change of altitude stratum, do not require separate messages. Delay information must be filed within the route of flight. If a change of altitude stratum is indicated, transmit separate messages as in subparagraphs 6−2−2e1 or 6−2−2e2.

4. When a composite, stopover, or terminal area delay flight plan is revised:

(a) Before departure, transmit the information to the original addressees plus any new addressees.

(b) After departure, transmit the information to all new addresses that are affected by the change.

5. Transmit flight plans when the ETD is less than 22 ½ hours of current time.

6. Address all IFR flight plan messages to the ARTCC serving the point of departure and all concerned oceanic and non−conterminous ATS units, except FAA ATCTs.

NOTE−
The ARTCC within whose control area IFR flight is proposed to begin will forward the proposed tower en route flight plan data to the appropriate departure terminal facility.

7. For flights inbound to the conterminous U.S. from Alaska or Hawaii, address only the first conterminous U.S. ARTCC (for example, for a proposed flight from Sitka to Houston, address PAZAZQZX, CZVRZQZX, and KZSEZQZX).

REFERENCE−
FAA Order JO 7110.65, Para 2−2−2, Forwarding Information.

6−2−3. CONTROL MESSAGES

a. Transmit all proposed IFR flight plan messages to the ARTCC within whose control area IFR flight is proposed to begin.

1. Communications functions. Flight plan data messages must be addressed to the computer only. All other types of messages for ARTCC attention must be addressed to the Flight Data position only. Acknowledgements for all numbered messages will be received from the computer or the Flight Data position indicating receipt by the ARTCC but not necessarily computer acceptance. See TBL 6−2−2.

TBL 6−2−2

ARTCC ID & Computer Flight Data

ARTCC	ID	Computer	Flight Data
Albuquerque	ZAB	KZABZQZX	KZABZRZX
Atlanta	ZTL	KZTLZQZX	KZTLZRZX
Anchorage	ZAN	PAZAZQZX	PAZAZRZX
Boston	ZBW	KZBWZQZX	KZBWZRZX
Chicago	ZAU	KZAUZQZX	KZAUZRZX
Cleveland	ZOB	KZOBZQZX	KZOBZRZX
Denver	ZDV	KZDVZQZX	KZDVZRZX
Fort Worth	ZFW	KZFWZQZX	KZFWZRZX
Honolulu	ZHN	PHZHZQZX	PHZHZRZX
Houston	ZHU	KZHUZQZX	KZHUZRZX
Indianapolis	ZID	KZIDZQZX	KZIDZRZX
Jacksonville	ZJX	KZJXZQZX	KZJXZRZX
Kansas City	ZKC	KZKCZQZX	KZKCZRZX
Los Angeles	ZLA	KZLAZQZX	KZLAZRZX
Memphis	ZME	KZMEZQZX	KZMEZRZX
Miami	ZMA	KZMAZQZX	KZMAZRZX
Minneapolis	ZMP	KZMPZQZX	KZMPZRZX
New York	ZNY	KZNYZQZX	KZNYZRZX
Oakland	ZOA	KZ0AZQZX	KZOAZRZX
Salt Lake	ZLC	KZLCZQZX	KZLCZRZX
San Juan	ZLU	TJZSZQZX	TJZSZRZX
Seattle	ZSE	KZSEZQZX	KZSEZRZX
Washington	ZDC	KZDCZQZX	KZDCZRZX

2. Adhere to a fixed order of data. Do not exceed the stated maximum number of characters or elements allowed for each field in messages addressed to an ARTCC computer. Flight plans filed containing more than the stated character maximums should be sent using the ARTCC flight data address.

3. For manual entry into Service B, one space character must be entered at the end of each data field. The first data field of a message need not be preceded by a space. The last data field of a message need not be followed by a space.

4. Each field of data is composed of one or more elements. Discrete elements of information within a field are separated by delimiters, generally slashes (/) or periods (ABC..DEF).

5. Messages addressed using an ARTCC flight data address (see TBL 6−2−2) are not processed by the ARTCC computer. Response and/or interpretation of these messages are dependent on flight data personnel action. The prime consideration of these types of messages must be the readability of the transmitted data.

6. All domestic flight data processing computers have the capability to return acknowledgments to the source and, depending on local adaption, return error messages and accept amendments. Notify the appropriate ARTCC Data Systems Specialist or Primary A position when it is suspected that a flight plan has been erroneously rejected by the computer.

7. IFR flight plans specifying stopovers or terminal area delays require separate messages be sent to the appropriate ARTCCs for each segment. Unless otherwise covered by a letter of agreement, treat flight plans proposing SUA delays in the same manner. Separate messages are also required for any other en route delays if a change of altitude stratum is proposed at the delay point. See subparagraph 6−2−3b14(h) for delays not involving a change of altitude stratum.

8. Some fields contain the necessary functions to operate the computer data terminal adapters and are designated by alpha characters (HIO..RAW−ER.V23.EUG/D0+30..16S). Do not separate these fields with spaces.

b. For en route automation system (EAS) flight data processing (FDP) acceptance, the complete message contents, the order of data, the number of characters allowed within any data field or element, and any associated operational procedures or restrictions are as follows (as used here, "field" refers to the EAS FDP field):

NOTE−
1. *Instructions for the completion of FAA Form 7233−1, Flight Plan, are contained in Appendix B, FAA Form 7233−1, Flight Plan.*

2. *Detailed operating instructions for processing IFR flight plans are contained in the operational system instructions.*

1. Start of message code (Field A). (New line key)

2. Preamble line (Field B). Consists of originator, priority, and addressee(s).

3. Originator line (Field C). Consists of a six-digit date-time group and the eight-character originator identifier.

4. End of line function (Field E). Same as subparagraph 6−2−3b1.

5. Source identification (Field 00). Nine or ten characters required followed by a space character in the following order:

(a) The three-character address of the originating facility.

(b) Four characters (digits) to indicate the time (in UTC) the flight plan was composed by the originator.

(c) Three characters (digits) representing the number of the message (for example, 021). It is recommended that numbering systems be restarted with 001 at the beginning of each day (0000Z).

NOTE−
There are no spaces between characters in subparagraphs 6−2−3b5(a), 6−2−3b5(b), and 6−2−3b5(c).

6. Message type (Field 01). The letters "FP" followed by a space character.

7. Aircraft identification (Field 02). Consists of two-to-seven alphanumeric characters followed by a space character. The first character of the identification must be a letter.

(a) Phrases such as FLYNET, snow time, etc., which do not identify specific aircraft but are supplemental data defining a special mission or function, must be contained in remarks (Field 11).

(b) For foreign aircraft flight identifications with a numeral as the first character, insert a Q as the first character and explain in the remarks section by listing the actual flight identification.

NOTE−
Use caution not to modify existing remarks.

8. Aircraft data (Field 03). Consists of two-to-nine characters followed by a space character. Aircraft data within the field may vary from one-to-three elements consisting of:

(a) Number of aircraft (when more than one) and/or the heavy aircraft indicator. For heavy aircraft the indicator is "H/." This element contains a maximum of two characters followed by a slash.

EXAMPLE−
2/F15
3H/B52
10/F18

(b) Type of aircraft. Insert the standard aircraft type designator, in accordance with FAA Order JO 7360.1, Aircraft Type Designators.

(c) Equipment suffix. This element consists of a slash (/) followed by one letter which is one of the approved designators identifying transponder and/or navigation gear.

9. Airspeed (Field 05). Consists of two-to-four characters followed by a space character. This field must indicate the filed true airspeed in knots or Mach number.

EXAMPLE−
350
M075

10. Departure point or coordination fix (Field 06). Consists of two-to-twelve characters followed by a space character. This field contains the departure point or fix at which an aircraft will pick up IFR. It must be a fix, not an airway. For proposed departures, it must match the first element in the route of flight; and for IFR pickups, it must match either the first element in the route of flight or the third element if the ./. or VFR is used as the second element.

11. Proposed departure time (Field 07). Consists of five or seven characters followed by a space character. This field contains the letter "P" followed by a four or six digit time group in UTC.

12. Requested altitude (Field 09). Consists of two-to-seven characters followed by a space character. Altitudes or flight levels, as appropriate, must be expressed in hundreds of feet but without leading zeros. The letters "OTP" must be entered in this field to indicate a requested altitude of VFR conditions-on-top. If a VFR conditions-on-top altitude is provided, it must be entered as "OTP/XXX where "XXX" is a VFR altitude. Blocked altitudes are indicated by entering the lower altitude of the requested block, the letter "B," and the higher altitude of the block (for example, 80B100, 240B270, with no spaces).

13. End of line (new line key) (Field E). The first occurrence of Field E must always follow Field 09 of the message. Any time a subsequent end of line becomes necessary, if used within Field 10, it must be preceded by the appropriate element separator (not a space). If used within Field 11, Field E may be entered at any point within the remarks sequence.

14. Route of flight (Field 10). The route of flight consists of departure point or pickup point (PUP), the route of flight, and normally a destination followed by a space character.

(a) Field 10 is a fixed sequence field and must begin with a fix (for example, fix, airway, fix, airway, etc.) The last element may be a fix or one of the route elements VFR, DVFR, or XXX (incomplete route indicator). An element is separated from another element by a period character.

(b) When consecutive fix elements or route elements are filed, the fixed sequence format is maintained by inserting two period characters between the filed Field 10 elements (for example, fix..fix or airway..airway).

(c) When a pilot files an airway..airway combination, obtain the point of transition and insert it in the transmitted flight plan (for example, SGF.J105..J24.STL.J24). The foregoing does not apply if the first encountered fix happens to be the next filed junction point within the route.

NOTE−
Airway..airway combinations in the route of flight require a defined junction (either five-character alphanumeric, location identification, or pre-defined fix-radial-distance).

(d) The slash character (/) is used to file a latitude/longitude fix or in describing an ETE.

(e) The maximum number of filed field elements for computer-addressed flight plans is 40. Double period insertions do not count against the 40-element limitation. Transmit flight plans filed exceeding the route element limitation to the ARTCC, not its computer.

(f) Fix Descriptions. A fix must be filed in one of the following ways:

(1) Fix name. Domestic, Canadian, and International identifiers of two-to-five alphanumeric characters.

(2) Fix-radial-distance (FRD). Consists of eight−to−eleven alphanumeric characters in the following sequence: Two-to-five characters identifying a NAVAID, three characters of azimuth expressed in degrees magnetic, and three characters of distance expressed in nautical miles from the NAVAID. Zeros preceding a significant character must be entered before the azimuth and distance components as required to assure the transmission of three characters for each.

(3) Latitude/Longitude. Consists of nine-to-twelve characters entered as follows: The latitude must appear as the first component as four numbers (trailing zeros required) followed by an optional letter "N" or "S." If the optional letter is omitted, north is understood. Latitude must be separated from longitude with a slash (/) element separator. Longitude must appear as the second component as four or five digits (trailing zeros required, leading zero optional) followed by an optional letter "W" or "E." If the optional letter is omitted, west is understood.

(4) NRS waypoints. NRS waypoints consist of five alphanumeric characters, which include the ICAO FIR identifier, followed by the letter corresponding to the FIR subset (ARTCC area for the CONUS), the latitude increment in single digit or group form, and the longitude increment.

EXAMPLE−
"KD34U"

(g) Route descriptions. A route must be filed in one of the following ways:

(1) Airway. The official airway designator must be filed.

(2) Coded routes. Coded routes are a shorthand method of describing a route segment or segments which may have an altitude profile described, an adapted airspeed within the route, re-entry or loop routes as an option, or a time delay at a fix within the route as an option. Some of the principal uses of coded routes are as follows:

[a] Instrument departures (DP). DP, if used, must be filed by the computer code designator as the second element of Field 10 and be followed by the transition or exit fix.

[b] STARs. STAR, if used, must be filed by the computer code designator as the next to last element of Field 10 and immediately follow the entry or transition fix.

[c] Published radials. Published radials (for example, within a preferred route) are considered airways. Do not file unpublished radials.

EXAMPLE−
.JFK053..DPK017
.RBV020

[d] Military routes. Certain military routes (for example, MTR and air refueling tracks/anchors), are considered coded routes. The route designator must be preceded and followed by the entry and exit fixes in terms of FRD, and re−entry information may be suffixed to certain military coded routes as follows:

[1] The entry and exit fix must be associated with a fix on the route, and the entry fix must be prior to the exit fix on the route.

EXAMPLE−
TNP355025..IR252
PKE107012

[2] Routes having re-entries for a single strategic training range (STR) site must contain the entry of alternate entry fix in terms of FRD, the route designator followed immediately by a plus sign (+), either the letter "R" (1st STR site) or "S" (2nd STR site), and a digit indicating the number of re-entries.

EXAMPLE−
(FRD) IR240+R2 (FRD)
(FRD) IR240+S3 (FRD)

[3] Routes having re-entries for two STR sites must contain the entry/alternate fix in terms of FRD, the route designator followed immediately by a plus sign (+), the letter "R," and a digit indicating the number of re-entries on the first STR site, immediately followed by second plus sign (+), the letter "S," and a digit indicating the number of re-entries on the second STR site.

EXAMPLE–
(FRD) IR240+R2+S3 (FRD)

[4] STR routes must be entered and exited at the respective primary fix. Alternate STR routes must be entered/exited at the alternate entry/exit fix. The routes must be identified by an individual name.

EXAMPLE–
(FRD) IR240+R2 (FRD) (Primary)
(FRD) IR240A+R2 (FRD) (Alternate)

[e] North American routes (NAR). NAR routes are numerically coded over existing airways and route systems from and to specific coastal fixes serving the North Atlantic.

EXAMPLE–
.NA9
.NA50

[f] Stereo routes. A stereo route must specify a pre-stored stereo tag. An "FP" message may be entered with a stereo tag as the only Field 10 entry, which causes the Field 10 data stored for the stereo tag to be substituted for the stereo tag and processed as the filed Field 10. Additionally, the filed departure point (Field 06) must agree with the stored departure point.

[g] Incomplete route indicator (XXX). When XXX, the incomplete route indicator, appears in Field 10, the element preceding the XXX element must be a fix.

[h] VFR or DVFR element. When VFR or DVFR is the second element of Field 10, the filed fix following VFR or DVFR must be internal to the ARTCC's area to whom the flight plan was initially submitted. When VFR or DVFR is other than the second element in Field 10, the element preceding the VFR or DVFR must be a filed fix.

(h) Fix suffix.

(1) En route delay suffix consists of an element separator (/), followed by the letter D, followed by the hours and minutes separated by a plus sign (+). Must be appended to a fix.

EXAMPLE–
.STL/D1+30
.PKE107012/D2+05

(2) Use of this suffix is limited to the following cases:

[a] Aerial refueling tracks and anchors. The suffix is appended to the entry fix.

EXAMPLE–
.ICT248055/D0+30.AR330

[b] En route delays not involving a change of altitude stratum and not involving a stopover, terminal area delay, or SUA delay unless specifically covered by a letter of agreement with the receiving ARTCC.

(3) ETE suffix. Consists of an element separator (/) and four digits appended to the destination. Leading zeros are required, and the time en route is expressed in hours and minutes.

EXAMPLE–
.STL/0105

(i) A period is not required after the last element of Field 10. If remarks (Field 11) are present, a space is required after the last element of Field 10. If remarks are not present, no space is required and Field F (end of message) should be the next entry.

15. Remarks (Field 11). Consists of the appropriate remarks code character and the remarks. Spaces are permitted within the remarks field to separate words or contractions. Remarks must be transmitted in Field 11 whenever a pilot files the information on the flight plan. A remark is required whenever there is a modification to the flight plan by the specialist.

(a) If it is necessary to make modifications to the filed route of flight for the purpose of achieving computer acceptance of the input due to, for example, correcting a fix or an airway identification, "FRC" (meaning "full route clearance necessary") must be added to Item 18. "FRC" must always be the first item following RMK/. When "FRC" appears on a flight progress strip, the controller issuing the ATC clearance to the aircraft must issue a full route clearance.

EXAMPLE−
−RMK/FRC

NOTE−
Input operators are limited to making only those changes required for computer acceptance. Modifications, such as those to conform with traffic flows and preferred/recommended routings, must only be made by the pilot or his/her operations office or the controller responsible for initiating the clearance to the aircraft.

(b) In the case of applicable military flights requesting that the flight plan is not passed to air defense radar (NOPAR), NOPAR must be the first item in Remarks (Field 11).

(c) Remarks for military flight plans filing an IR route must contain the IR route designator, entry time prefaced by the letter "E," exit time prefaced by the letter "X," and MARSA when applicable. Remarks for flight plans filing a terminal area delay must contain the airport identifier at which the delay will occur, followed by the letter "D," followed by the duration of the delay in hours plus minutes, followed by the destination airport. These should be the first item in Remarks (Field 11).

(d) When a pilot files an FAA−assigned three-letter company designator, if the designator and/or radiotelephony is new or changed, the authorized radiotelephony call sign must be included in the remarks field for at least 60 days following the effective date. In cases where there is no three-letter identifier assignment or a three-letter identifier is used in a medical emergency, the assigned radiotelephony must be included in the remarks field.

NOTE−
1. *A radiotelephony may be assigned by the FAA without assigning a three-letter identifier. Special radiotelephony assignments are usually temporary and for commemorative flights, large number of aircraft in an organized race, aircraft operating during an emergency or disaster condition, or aircraft requiring special handling for test purposes.*

2. *The pilot is responsible for knowing when it is appropriate to file the radiotelephony in remarks under the 60 day rule or for special radiotelephony assignments. The pilot may also request that the radiotelephony be filed in remarks due to special needs of the flight.*

16. End of message function (Field F). Consists of enter function.

6−2−4. ADDITIONAL MESSAGES

The following messages are eligible for input to ARTCC computers via Service B, in addition to the flight plan ("FP") message:

a. Remove strip (RS). The purpose of the RS message input is to advise the computer that data on a particular flight is no longer valid and in effect cancels the flight plan and removes it from computer storage.

1. Eligibility. RS messages may be entered only for flight plans which:

(a) Are proposed flights.

(b) Have been previously entered by the same source entering the RS message.

(c) The flight plan is inactive (for example, a departure strip must not yet have been printed). Otherwise, the following rejection message is returned: "REJECT−−NOT YOUR CONTROL."

2. Format. Fields 01 (Message type) and 02 (aircraft identification) are required.

EXAMPLE−
RS SWA138

b. Amendment message (AM). The purpose of the AM message is to change data previously stored in the ARTCC computer.

1. Eligibility. Same as for the RS message (above).

2. Format. AM messages sent to the ARTCC computer must follow a specific format. First, the field to be amended must be identified, then the amended information given. The ARTCC computer recognizes the following fields by either number or name. See TBL 6−2−3:

TBL 6−2−3
Field Number and Name

Field	Field Number	Field Name
Aircraft Identification	02	AID
Aircraft Type	03	TYP
Speed	05	SPD
Departure/Coordination Point	06	FIX
Proposed Time	07	TIM
Altitude	09	RAL
Route of Flight	10	RTE
Remarks	11	RMK

3. Restrictions.

(a) If Field 02 is to be amended, no other field may be amended in the same message. If Field 02 and other fields are to be amended, send an RS message and re−enter the entire corrected flight plan. If an attempt is made to amend Field 02 within a multiple amendment message or to amend Field 02 to M, the following rejection message is returned: "REJECT−INVALID AMENDMENT."

NOTE−
Alternate procedure is to send two amendments—the first amends field 2; the second amends the other field or fields.

(b) Field 07 Amendments. An attempt to amend Field 07 to anything other than a P-time is not allowed. If such an amendment is attempted, the following error message is returned: "COFIE INVALID TIME PREFIX."

(c) Amendment to Fields 06, 07, and 10: Where Fields 06, 07, and 10 are amended with a single AM message, the following rules apply:

(1) The amended Field 06 replaces the previously stored coordination fix (Field 06).

(2) The amended Field 07, with appropriate letter prefix, replaces the previously stored coordination time (Field 07).

(3) The amended route data (Field 10) may completely replace the previously filed Field 10 or may be merged with the filed Field 10.

(4) If the last element of the amended route data is followed by a destination indicator, this last element becomes the new destination fix.

(5) When amended route data is merged with filed data, it replaces all data between the departure point and the first non−amended element remaining in the field. The last element of the amended data must match the first element of the remaining non−amended data, otherwise the following rejection message is returned: "REJECT−−(last element) CANNOT MERGE."

(d) Amendment to Field 10 Only. Except as permitted above, a Field 10 amendment must be the only field amended; no other field may be amended with the same message. Otherwise, the following is returned: "REJECT−INVALID AMENDMENT."

EXAMPLE−

Message Type	*Aircraft Identification*	*Field to be Revised*	*New Field Data*	*Field to be Revised*	*New Field Data*
AM	TWA179	07	P0800	08	350
AM	UAL466	07	0300		
AM	AAL4355	10	ORD.J60.DEN		

c. Correction message (CM). When the ARTCC computer detects an error in a flight plan, an error message is generated to the sender when the sender is within the departure ARTCC's adapted boundaries.

NOTE−
These procedures may not apply to all operational systems.

1. Eligibility. CM messages may be entered only for the period for which the departure ARTCC's program is adapted, normally five minutes. After that time, the flight plan in error drops out to the ARTCC Primary A position for re−entry. The sender has primary responsibility for corrective action.

NOTE−
Error messages are generated only on messages from sending stations within the adaptation parameters of the departure ARTCC and for only that portion of the route within that ARTCC's adapted boundaries. Other flight plans in error are referred to a Primary A position.

2. Format. Responses to error messages must be transmitted in the form of a CM message within the time parameters adapted for your ARTCC.

EXAMPLE−
ARTCC-Generated Error Message:

Sending Facility	*MSG Type*	*MSG NR*	*Field in Error*	*Data in Error*	*Reason*
DCA	Error	123	08	9A	FORMAT
CM Format:					
Field 00	MSG Type		Correct Data		
DCA 1820123	CM		090		

3. When a CM message in response to an error message results in any change to a pilot-filed Field 06 (Departure Point) or Field 10 (Route of Flight) once the flight plan has been accepted, an AM message must be sent to add a field 11 intra-ARTCC remark. In remarks, insert "FRC PILOT FILED (original data)."

4. Should a "NOT YOUR CONTROL" response be received, do not retransmit the flight plan or the AM. Confirm ARTCC receipt of the flight plan or AM (FRC/REMARKS) via interphone with the Primary A position. See TBL 6−2−4.

TBL 6−2−4
Computer Flight Data Input Chart

Field	Element	Example	Requirements
A	Start of Message (SOM code)	New Line Key	Required for SOM recognition
B	Preamble Line	FF KZFWZQZ	Provides priority, and addressee
C	Originator	DTG KMLCYFYX	Required for ending the message header
D	End of Line	New Line Key	EOL
E	End of Message	Enter Function	End of Message

6−2−5. COORDINATE RNAV ROUTES

a. When accepting flight plans containing coordinate RNAV routes, ensure that the route of flight after the departure fix is defined by latitude/longitude coordinates and a fix identifier.

b. The arrival fix must be identified by both the latitude/longitude coordinates and the fix identifier.

EXAMPLE−

(1)	*(2)*	*(3)*	*(4)*	*(4)*	*(5)*
MIA	SRQ	3407/10615	3407/11546	TNP	LAX

1. Departure airport.

2. Departure fix.

3. Intermediate fixes defined by latitude/longitude coordinates.

4. Arrival fix for the destination airport in terms of both the latitude/longitude coordinates and the fix identifier.

5. Destination airport.

6−2−6. FLIGHT PLAN ACTIVATION

a. If a departure report has not been received within a predetermined time, but not less than one hour after the proposed departure time, and specific arrangements have not been made to activate the flight plan, cancel and store in the history file.

b. The FSS history file is used for statistical and historical purposes. Movement messages, pilot briefings, and aircraft contacts are stored in the history files automatically and retained for 45 days.

c. When a pilot reports an actual departure time of more than two hours prior to the current clock time, request an updated ETE based on the aircraft's present position. Amend the ETE in the existing flight plan and activate the flight plan using the current time as the time of departure and inform the pilot of the new ETA.

6−2−7. DEPARTURE MESSAGES

a. When a pilot activates a flight plan or requests an assumed departure, transmit a departure message to the destination tie-in facility as specified in FAA Order JO 7350.9, Location Identifiers.

b. When a pilot activates a flight plan with other than the facility holding the flight plan, transmit a departure message to the departure tie-in facility.

c. When the proposed flight plan is received from another FSS or BASOPS, the departure facility will have only partial flight plan data. Add a remark indicating the Service B address of the facility holding the complete flight plan. Operational systems will automatically add this to the "Remarks" section of the flight plan.

EXAMPLE−
FF KBOIYFYX
DTG KCDCYFYX
VFR N12345 C182/U PVU BOI 1958
$FPKIADXCLX

d. If the pilot elects to close the flight plan with a facility other than the designated tie−in facility, send the departure message with remarks to both tie-in facilities (for example, FIRIV PAEN [file arrival Kenai]). The designated tie−in facility must assume both destination and SAR responsibility.

EXAMPLE−
FF PAENYFYX PAFAYFYX
DTG PAJNYFYX
(DEP (MN) (RD)−N12345−PANC1500−PAFA−FIRIV PAEN)

e. On civilian flight plans, if the pilot advises of stopover points, show these in Item 18.

EXAMPLE−
FF KBOIYFYX
DTG KCDCYFYX
(FPL (MN)(RD)−N12345−VG
−P28−S
−KPVU1755
−N0115A030 DCT
−KBOI0123
−RMK/LNDG TWF

f. When using the format of FAA Form 7233−4 or DD Form 1801, in remarks use coded data pertinent to services, passengers, or cargo. In the absence of Item 18 entries, enter the number "0" (meaning none) in the remarks field.

EXAMPLE−
−RMK/0

REFERENCE−
DoD Flight Information Publication, General Planning Document.

1. Flight notification messages with remarks generate an alert at designated workstations.

2. When landing at a civilian airport, if there are no remarks with the flight notification message, it is placed on the Inbound List with no alerts for notification purposes.

3. When landing at a military airport, all flight notification messages generate an alert.

EXAMPLE−
FF KRCAYXYX
DTG KRIUYFYX
IFR DECAL01 T18/R SMF RCA 0135
$AP3NP3S
FF KBOIYFYX
DTG KCDCYFYX
VFR R54321 2/UH1/U SLC BOI 1943 $N

g. Address military stopover flight notification messages to and obtain acknowledgements from the destination tie-in facility serving all destinations.

1. For the first leg, transmit the items in subparagraphs 6−2−7a and 6−2−7f.

2. For each subsequent leg, transmit the destination, ETE, and remarks applicable to that leg only, prior to (/). Remarks pertaining to the entire flight are entered in the "Remarks" section of the original flight plan and are transmitted to all addressees.

3. Separate stopover legs by inserting a slant (/) at the end of each leg except the last. Begin each leg on a new line.

EXAMPLE−
FF KANDYFYX KGNVYFYX KMIAYFYX
DTG KDCAYFYX
IFR VV12345 P3 ADW CHS 1300/
NIP 01+30 A5 BALL DP10 AP5 S/
MIA 02+30 NO DE-ICING EQUIPMENT

4. For composite flights, specify type flight plan as the first item of each leg.

5. When en route delays are involved, include delay time in ETE.

h. Apply military flight plan procedures to all civilian aircraft landing at military bases.

NOTE−
It is the civilian pilot's responsibility to obtain permission (from military authorities) to land at a military base.

i. Apply civilian flight plan procedures to civilian aircraft departing military bases and en route to civilian airports.

6−2−8. AWAITING MESSAGE ACKNOWLEDGMENT

a. Following transmission, suspend the following message types until acknowledgment is received from the addressee, then store in the history file:

1. FPL Flight Plan

2. SPL Supplemental

3. DEP Departure

4. CNL Cancellation

5. MOD Modification

b. If an acknowledgment is not received within the following time period, use the telephone or interphone to assure delivery.

1. Thirty minutes after departure if ETE is between 30 minutes and two hours.

2. One hour before ETA if ETE is two hours or more.

3. Thirty minutes after departure if remaining overnight/VIP information is contained in remarks of a military flight notification.

c. When an acknowledgment for a message is required and has not been received in accordance with the procedure described above, retransmit the complete message to the addressee.

d. Messages awaiting acknowledgment are suspended on the suspense list. It contains a list of all numbered Service B messages and those messages transmitted from the flight plan mask not acknowledged by all the addressees.

1. The message identification is the aircraft identification for flight notifications and/or the message number for all other message types.

2. Acknowledgments received via NADIN will be automatically processed if they are in the proper format.

3. Improperly formatted acknowledgments will be directed to a list for manual processing and will generate an alert at designated workstations for editing.

4. The suspense list will display the aircraft identification and message numbers in chronological order of transmission times and the addressees for each message with an indication of those that have not acknowledged.

5. If a transmission has not been acknowledged by all addressees within 30 minutes, an alert will be generated by the operational system.

6. Upon receipt of a suspense alert, retransmit the message to addressees who have not acknowledged the message.

7. When an acknowledgment message is received from any other source, such as interphone/ telephone or facility guarding for the addressee, the specialist must manually acknowledge the message.

6−2−9. ACKNOWLEDGING FLIGHT NOTIFICATION MESSAGES

Acknowledge a flight notification message as soon as practicable after receipt. Message acknowledgement formats are contained in Appendix D, Service B Message Formats.

NOTE−
The operational system will automatically acknowledge flight notification messages which are received in or have been edited into the correct format.

6−2−10. ACTION BY ADDRESSEES

In addition to acknowledging receipt of flight notification, addressees must take the following actions:

a. Military IFR flights.

1. Notify BASOPS, if applicable, of the inbound flight.

2. Upon request, deliver flight plan amendments to the ARTCC.

3. File the flight notification message in the operational system history files or with the daily traffic.

4. Forward the actual departure time to the destination tie−in facility for the next destination.

b. Military VFR flights.

1. Notify BASOPS, if applicable, of the inbound flight.

2. Suspense the message, await closure/cancellation/departure and assume destination station responsibility.

3. Forward the departure time to the destination tie-in facility and assume departure station responsibility.

4. All flight notification messages are suspended on the Inbound List. An entry on the list will remain there until the flight plan is closed. Thirty minutes after the ETA, if the flight plan has not been closed, it is considered overdue and will generate an alert at designated workstations.

c. If no information is received (for example, departure time, revised ETA) indicating that the flight is still active prior to the void time, close the flight plan and note this on the flight notification message and file.

6−2−11. MAJOR FLIGHT PLAN CHANGES FROM EN ROUTE AIRCRAFT

a. Change of destination.

1. When a civil aircraft on a VFR flight plan or a military aircraft on any flight plan changes destination, obtain and record, as a minimum, the following information if not already known:

(a) Type of flight plan.

(b) Aircraft identification.

(c) Aircraft type.

(d) Departure point.

(e) New destination.

(f) New ETA.

(g) Present position.

(h) Old destination.

(i) Estimated time en route.

2. Transmit a revised flight notification message to the departure, original, and new destination tie−in facilities containing the type of flight, aircraft identification, aircraft type, departure point, new destination, new ETA, and in Remarks, aircraft position and time, the words "ORIG DESTN" followed by the identifier of the original destination.

b. Change from IFR to VFR. When a civilian aircraft changes from an IFR to a VFR flight plan, obtain all flight plan information and send appropriate flight plan messages, including a SPL message.

c. Military Change from IFR to VFR or VFR to IFR. When a military aircraft changes from IFR to VFR, or VFR to IFR, or requests that other significant information be forwarded, transmit this information to the destination station.

6−2−12. CHANGE IN ETA

When an aircraft wants to change its ETE, obtain a new ETA, and using appropriate messaging procedures, notify the destination tie-in facility of the new ETA. The destination tie-in facility must acknowledge and, thereafter, use the new ETA as the standard for any necessary follow−up action (for example, a QALQ message).

6−2−13. FLIGHT PLAN CLOSURE

a. When closing a VFR flight plan, obtain departure point and destination, if not already known.

NOTE−
1. *A closed VFR flight plan is one that has been activated and is then removed from an inbound list.*

2. *A canceled VFR flight plan is one that is removed from a proposed list and has not been activated.*

b. Do not transmit arrival reports except under unusual circumstances or in the following cases:

1. Transmit arrival or other information involving FAA or Canadian MOT aircraft by a numbered message to any facility requested by the pilot.

EXAMPLE−
FF KDCAYFYX
DTG KHHRYFYX
HHR002 DCA
N2 A0839 (Remarks, as appropriate)

2. For U.S. military aircraft, transmit arrival reports to the departure station only when:

(a) Requested by BASOPS.

(b) Special military flights arrive.

3. When a pilot closes a flight plan with a station that has not received a flight notification message, obtain as a minimum, the departure point, the flight planned destination point, and the station with which the flight plan was filed.

(a) If the station receiving the closure is the tie−in station for the planned destination, transmit the appropriate message to the departure station with the remark "FPNO" (flight plan not received) and the departure point and destination identifiers. The departure station must relay the arrival information to the station holding the flight plan notification message in the active file.

(b) If the station receiving the closure message is not the destination tie-in station, transmit the appropriate closure message to the destination tie-in station.

Section 3. Military Operations

6–3–1. SPECIAL MILITARY FLIGHTS

Advise the ARTCC of flight notification messages, progress reports, changes en route, and related messages concerning Presidential or Vice-Presidential flights.

6–3–2. MILITARY FOREIGN FLIGHTS

Generally, all military foreign flights are required to clear through specified military bases. Pilots normally will not file flight plans directly with an FSS unless BASOPS is not available. BASOPS with no Service B access will forward an ICAO-type flight plan message via their tie-in FSS for relay through the Aeronautical Fixed Telecommunications Network (AFTN). BASOPS should specify all addressees, both ATC and operational, in accordance with ICAO standards and military regulations.

6–3–3. U.S. AIR FORCE/U.S. NAVY UNDERGRADUATE PILOTS

Aircraft piloted by solo U.S. Air Force/U.S. Navy undergraduate student pilots (who may occasionally request revised clearances), are normally restricted to flight in VFR conditions. The aircraft identification in the flight plan must include the letter "Z" as a suffix. Do not use this suffix in ground-to-air communication.

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

6–3–4. MESSAGE HANDLING

Accept and forward messages from any military authority that concern aircraft movement, national defense, safety of flight, or emergencies. This includes, but is not limited to, the following:

a. Flight advisory messages.

1. The FSS originating the advisory or receiving it from the originating BASOPS must determine the FSS nearest the aircraft's estimated position for VFR flights, or the appropriate ARTCC for IFR flights. Transmit a numbered message only to the facility identified. Include in the text "FLT ADVY," aircraft identification and type, and route of flight, in that order. The last item must be the identifier of the originating BASOPS or FSS. Plain language may be used.

2. Inform the originator if unable to deliver the flight advisory within 15 minutes. Store the message in the history files.

3. For military flights to the U.S. that include "REQ ARR" (request arrival) in the remarks, suspend the flight plan until arrival information is received from BASOPS and forward to the departure location.

4. For military flights from the U.S., include "REQ ARR" in remarks section of ICAO flight plan, if requested by BASOPS. Terminate suspense action only after receipt of an arrival message and delivery to BASOPS.

b. Electronic counter measure (ECM) alerts. Transmit a numbered message via Service B to tie-in stations serving the addressees. If acknowledgements are not received within one hour, deliver via telephone.

c. REACH and SAM flight messages. Forward to the airlift command post specified by the pilot if message contains request "Pass to Air Mobility Command & Airlift Command Post," specified by the pilot.

6–3–5. AIRCRAFT MOVEMENT SERVICES WITHIN AN ADIZ-IFR

In addition to the normal handling of aircraft operating in accordance with IFR, specialists must forward ADIZ penetration information or position reports on IFR operations outside of controlled airspace immediately to the appropriate ARTCC.

6−3−6. AIRCRAFT MOVEMENT SERVICES WITHIN AN ADIZ-DVFR

For security control of air traffic, specialists must forward to NORAD specific information contained in flight plans filed by a pilot operating or proposing to operate in accordance with DVFR within an ADIZ.

NOTE−
Other offices, military and civilian, as well as pilots, may file DVFR flight plans for civilian aircraft with a FSS for forwarding to NORAD.

6−3−7. FORWARDING DVFR INFORMATION

a. Forward DVFR flight plan information to NORAD via the Service B NORAD address or by telephone.

NOTE−
1. *The following NORAD addresses are group addresses that include all appropriate NORAD sectors and law enforcement: KZAMZQZX – the CONUS and San Juan. PHIRAOCZ – Hawaii PAEDYYYX – Alaska*

2. *NORAD will not send an acknowledgement and specialists must manually acknowledge the message in the suspense list. NORAD headquarters assumes responsibility for receipt.*

b. DVFR flight plans must be entered into the operational system for processing in accordance with system instructions and include the following information:

1. Aircraft call sign.

2. Number and type of aircraft.

3. Altitude (within ADIZ).

4. True airspeed.

5. Time of departure.

(a) When the flight plan information is provided before the aircraft's departure, enter as a proposal. Depart the flight plan immediately upon receipt of the actual departure time.

(b) If arrangements cannot be made to obtain the actual departure time, forward the ETD.

6. Point of departure.

7. ETA.

8. Destination.

9. Remarks.

(a) DVFR discrete transponder code.

(b) True airspeed.

(c) Estimated point of penetration of the ADIZ (latitude/longitude or fix−radial−distance), except in Alaska.

(d) Estimated time of penetration of the ADIZ, except in Alaska.

(e) On a proposed flight plan, a single "X" may replace the DVFR discrete transponder code, true airspeed, estimated point of penetration of the ADIZ, or the estimated time of penetration of the ADIZ.

(f) If a no arrival report (NORIV) will be filed with an appropriate aeronautical facility, include the contraction "NORIV" as a non-transmitted remark. Do not pass "NORIV" to NORAD.

EXAMPLE−
Missing true airspeed: 1210 X 3442/09345 1446
Missing estimated point of ADIZ penetration and time: 1210 135 XX

NOTE−
The use of NORIV implies that NO SAR is desired.

c. Forward DVFR flight plan information for aircraft operating into Canada using the same procedures in subparagraph 6−3−7b, except add "DVFR" in remarks and transmit the information to the appropriate Canadian transborder tie-in facility.

6−3−8. STOPOVER DVFR FLIGHT PLANS

Accept stopover DVFR flight plans filed on those aircraft planning one or more landings (within an ADIZ) en route to the destination, provided the information in paragraph 6−3−7 is furnished for each segment of flight. Remind the pilot that 14 CFR 99 requires departure times to be made good and that a written record should be retained of these times at each departure point.

Section 4. International Operations and Messages

6–4–1. GENERAL

a. Title 19 of the U.S. CFR, Part 122 contains Advance Passenger Information System (APIS) regulations, which require APIS manifests to be submitted to U.S. Customs and Border Protection (CBP) for all private aircraft arriving from or departing for a foreign port or place. APIS regulations also require that electronic notices of arrival and departure as well as electronic manifests relative to travelers (passengers and crew) be submitted to CBP within specific timeframes. For detailed information on the APIS regulations, see Advance Information on Private Aircraft Arriving and Departing the United States, 73 Fed. Reg. 68,295 (Nov. 18, 2008) (19 CFR 122.22). This publication, along with other resources, is available at http://www.cbp.gov. In addition, 14 CFR and ICAO require flight plans for all civilian aircraft operation between the U.S. and foreign locations. International flight plan information and ADIZ penetration requirements are listed in other publications (for example, the AIM, the AIP, 14 CFR 91, and 14 CFR 99).

b. This section provides guidance to FSS facilities when transmitting international flight movement messages. It incorporates relevant information from ICAO and 14 CFR documents. All personnel required to handle international messages must be familiar with ICAO documents containing instructions for preparing and transmitting communications through the Aeronautical Fixed Telecommunications Network (AFTN) circuits. These documents should be retained at facilities. FSS personnel must not act as agents for any aircraft operating or dispatching company.

NOTE–
International telecommunications instructions are in the International Standards and Recommended Practices, ICAO Annex 10 – Aeronautical Telecommunications, Volume II. PANS ATM DOC 4444, Procedures for Air Navigation Services, lists various ATS movement messages. Location indicators are contained in ICAO Document 7910, and Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services are contained in ICAO DOC 8585. FAA policies concerning acceptance of messages for international transmission are contained in 14 CFR 189.

c. Address the message to the proper FSS gateway facility/sector for handling. FSSs that transmit only occasional international messages or are unable to determine the correct addressing for all air traffic units concerned may refer or transfer the pilot to the proper gateway facility/sector. The FSS gateway facility/sector and their areas of responsibilities are as follows:

1. Miami FSS sector (MIA): Africa, Bermuda, Canada, Caribbean, Central America, Europe, North Atlantic, and South America.

2. Kenai FSS (ENA): Alaska.

3. Honolulu (HNL)/Oakland (OAK) sectors: Pacific.

4. Seattle sector (SEA): Pacific Northwest to Alaska.

d. To ensure that the FSS gateway facility/sector understands your request, include T (transmit) instructions in the first line of text.

EXAMPLE–
FF KOAKYFYX
DTG PAJNYFYX
OAK T ALL INTL ADDRESSEES
(Text)

e. Use of FAA Form 7233–4 is mandatory for all IFR flights that will depart U.S. controlled airspace and enter international airspace. The filer is responsible for providing the information required in items 3 through 19.

6–4–2. ATS MESSAGES

ATS messages, as used in this section, is a generic term meaning and including: flight information, alerting, air traffic advisory, and ATC services.

6−4−3. CATEGORIES OF ATS MESSAGES

The following ATS messages, with their normal priority indicators, are authorized for transmission by any means (for example, AFTN, NADIN, interphone, computer-to-computer, or via the aeronautical mobile communications service), as applicable.

a. Emergency messages.

1. Distress messages and distress traffic, including alerting messages (ALR) relating to distress (DETRESFA) phase−SS.

2. Urgency messages, including alerting messages relating to an alert (ALERFA) phase or to an uncertainty (INCERFA) phase−SS.

3. Other messages concerning known or suspected emergencies which do not fall under subparagraphs 6−4−3a1 and 6−4−3a2 and radio communications failure messages−FF or higher as required.

b. Movement and control messages.

1. Flight plan (FPL)−FF.

2. Amendment and coordination messages.

(a) Departure (DEP)−FF.

(b) Delay (DLA)−GG.

(c) Arrival (ARR)−GG.

(d) Boundary estimate (EST)−FF.*

(e) Modification (CHG)−FF.*

(f) Coordination (CDN)−FF.*

(g) Acceptance (ACP)−FF.*

3. Cancellation (CNL)−GG.*

4. Clearances, flow control (SPL, CHG, CDN)−FF or DD.*

5. Transfer of control (TCX)−FF.*

6. Requests (RQS)−FF.*

7. Position reports (AIREP)−FF.*

c. Flight information messages.

1. Traffic information−FF.*

2. Meteorological information (MET)−FF or GG.

3. Operation of aeronautical facilities and essential airport information (NOTAM)−GG.

** Normally exchanged between ATC units via voice circuits.*

6−4−4. SERVICE MESSAGES

a. NADIN immediately generates a service message to an originator when incorrect code or routing indicators are detected.

EXAMPLE−
FF KZKCZQZX
031840 KSLCYTYX
SVC. ZKC121 QTA RPT

FF KZKCZQZX
031840 KSLCYTYX
SVC. ZKC122 QTA MSR

b. Assign the appropriate priority indicator to international service messages. When service messages refer to messages previously transmitted, assign the same priority prefix. Identify a service message by inserting "SVC" as the first item of the text.

EXAMPLE−
FF TJSJYFYX
DTG KSEAYFYX
SVC. RUMES 231015
(Text)

6−4−5. TRANSMISSION VIA NADIN

International messages are generally introduced on NADIN for relay to AFTN circuits.

a. Operational systems use the ICAO flight plan or SVC−B message formats as described in the operational system operating procedures.

b. Handle international messages on NADIN for relay to AFTN as follows:

1. Start of message. New line key.

2. Preamble (priority, space, addressee(s)).

(a) Priority. Two-character precedence field.

(b) Addressee(s). Not to exceed 69 characters or 7 addressees, each addressee separated by a space.

(c) End of line (EOL). New line key.

(d) End of text (EOT). Enter function.

6−4−6. TRANSMISSION OF ATS MESSAGES

a. Air traffic service messages are interchanged in the international air traffic control system in the following modes:

1. The preferred step-by-step mode wherein each ACC/ARTCC sends forward the full current (updated) flight plan information as the flight progresses.

2. The simultaneous mode wherein information extracted from the filed FPL is sent simultaneously to all ATS units along the route of flight. In this mode, only amendments to the FPL, plus necessary control information, are forwarded from ARTCC to ARTCC as the flight progresses.

b. Prepare and transmit ATS messages as described below. Address these messages as follows:

1. Include an eight-character addressee indicator for each addressee. When the number of addressees required is more than the operational system parameters allow, two or more transmissions of the message must be made. The eight-letter combination addressee indicators are composed as follows:

(a) The four-letter ICAO location indicator (for example, MPTO). Use only those listed in ICAO DOC 7910 (Location Indicators). Some ICAO eight-character addressees for Mexico and Canada are listed in FAA Order JO 7350.9, Location Identifiers.

(b) A four-letter designator for the facility type/office, or if no designator has been assigned, affix YXYX for military, ZZZX for aircraft in-flight, or YYYX for all other cases (for example, MTPPYYYX) (see note).

REFERENCE−
ICAO DOC 8585, Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services.

NOTE–
The most frequently used and authorized designators are:
YAYX Government Civil Aviation Authority (FAA Regional Office or Headquarters).
YCYX Rescue Coordination Center (RCC).
YDYX Authority Supervising the Aerodrome.
YFYX Aeronautical Fixed Station (FSS/IATSC).
YMYX Meteorological Office (NWS).
YNYX International NOTAM Office (NOF).
YTYX Telecommunications Authority.
YWYX Military Flight Operational Control Center.
YXYX Military Organization (BASOPS).
YYYX Organization not allocated a two−letter designator.
ZOZX Oceanic Air Traffic Control Center.
ZPZX Air Traffic Service Reporting Office.
ZQZX Computer Facility at ACC/ARTCC.
ZRZX ACC/ARTCC. (Center in charge of a FIR/UIR when the message is relevant to a VFR flight (AMIS)).
ZTZX Aerodrome Control Tower.
ZZZX Aircraft in−flight.

(c) A one-letter designator will appear following an air carrier designator to indicate the department or division of the organization addressed.

2. Filing time. A six-digit date/time group indicating the time the message is filed with the FSS for transmission.

c. Originator indicator. Consists of an eight-letter sequence similar to an address indicator, identifying the place of origin and the organization originating the message.

d. Supplementary address and origin information. When the four−letter designators YXYX, ZZZX, or YYYX are used, identify the aircraft operator or organization at the beginning of the text preceding the start−of−ATS data symbol (− −), in the same order as in the addressee(s) and/or originator indicator(s). Where there is more than one such insertion, the last should be followed by the word "stop." Where there are one or more insertions in respect to addressee indicators plus an insertion in respect to the originator indicator, the word "from" is to appear before that relating to the originator.

e. When addressing flight plan messages or related amendments and flight plan cancellation messages to ARTCCs, use one of the four-letter designators as follows:

1. If message is relevant to IFR and:

(a) The ARTCC is computer-equipped (U.S. ARTCCs), use ZQZX.

(b) The ARTCC is not computer-equipped, use ZRZX.

(c) Relevant to oceanic operations, use ZOZX.

NOTE–
Some ARTCCs may request specific addressing different from above. ZTZX and ZPZX are used internationally but are not used in internal U.S. application.

2. If message is VFR (AMIS), use ZRZX.

3. If SVC or administrative, use ZRZX.

6−4−7. ORIGINATING MESSAGES

a. Messages for ATS purposes may be originated with ATS units by aircraft in-flight, or, through local arrangements, a pilot, the operator, or their designated representative.

b. Accept air-filed flight plans or changes in destination information from aircraft inbound from foreign locations and, if requested by the pilot, enter customs notification service.

c. Do not accept round-robin flight plans to international locations.

NOTE−
FSS specialists must log a double (2) count for round-robin flight plans.

d. Do not accept assumed departure flight plans when the destination is in a foreign country other than Canada.

e. Pilots, operators, or their designated representative must originate aircraft movement, control, and flight information messages for purposes other than ATS, such as operational control.

6−4−8. ADDRESSING MESSAGES

a. Addressing the flight plan is determined by the point of departure, the destination, and the FIR boundaries to be penetrated during the course of the flight.

b. Address IFR FPL messages to the ARTCC serving the airport of departure and to all ATS units (including oceanic) providing air traffic control service or concerned with flight along part or the whole of the route to be flown except FAA ATCTs and other conterminous U.S. ARTCCs.

c. For flights where the destination is in Canada, address only the initial and final ATS units. It is not necessary to address each FIR through which the flight will operate.

NOTE−
Within the North Atlantic (NAT) region, FPLs on turbo jet aircraft transiting the control areas of Gander Oceanic, New York Oceanic, Reykjavik, Santa Maria Oceanic, Shanwick Oceanic, and Sondrestrom (south of 70 degrees), within 90 NM of the control area boundary, must be addressed to the adjacent ACC to provide lateral separation. For all other aircraft, a 120 NM proximity limit applies.

d. Flight plans and associated messages for all IFR flights, including the IFR portions of mixed IFR/VFR flights, entering, overflying, or departing the EUROCONTROL Integrated Initial Flight Plan Processing System (IFPS) Zone (IFPZ), must be addressed only to the two IFPS addresses for that portion of the flight within the IFPZ: EUCHZMFP and EUCBZMFP. IFPS will ensure distribution of the accepted flight plan to all relevant ATS units within their area of responsibility. For more information on the IFPZ, go to: https://www.eurocontrol.int/system/integrated-initial-flight-plan-processing-system.

NOTE−
Detailed procedures and information applicable to flight plan addressing and distribution are contained in the EUROCONTROL "Network Operations HANDBOOK – IFPS User's Manual."

e. Transmit all IFR FPLs to ARTCCs no less than one hour prior to the proposed departure time. Do not hold FPLs until after departure time and transmit as a combined FPL and departure (DEP) message. Separate FPL and DEP messages must be transmitted.

NOTE−
IFR ICAO flight plans do not require an acknowledgement to the transmitting facility.

f. Address aircraft movement messages only to those ATS units responsible for the provision of relevant service, except when requested by the operator concerned, these messages, when transmitted via the AFTN, may also be routed, as specified by the operator or a representative to:

1. One addressee at the point of intended landing or point of departure.

2. Not more than two operational control units concerned.

g. The ARTCC serving the departure airport must transmit the DEP message on IFR aircraft to all known recipients of the FPL message. Flights between conterminous U.S. and Canada (excluding Gander Oceanic), Alaska, Hawaii and Puerto Rico do not require DEP messages. Discontinuance of DEP messages affecting the route of flight can only be accomplished by an ICAO Regional Air Navigation Agreement.

6−4−9. FLIGHT PLAN FORMS AND INSTRUCTIONS

a. All flights that depart U.S. controlled airspace and enter airspace controlled by a foreign Air Navigation Service Provider (ANSP) must use FAA Form 7233−4, International Flight Plan, (see Appendix A) the ICAO

Model Flight Plan Form in ICAO DOC 4444, or an electronic equivalent. DoD/military may still use DD Form 1801, Military International Flight Plan. The flight plan filer is responsible for providing the information required in items 3 through 19. DoD/military may still use FAA Form 7233−1 or DD Form 175 within U.S. controlled airspace. Civilian filers of stereo route flight plans may also use FAA Form 7233−1.

b. The procedure described in subparagraph 6−4−9a also applies to all flight plans originating within or transiting Pacific FIRs and flying to or from FIRs beyond the Pacific region including the North American (NAM) region.

NOTE−
The NAM Region encompasses the conterminous U.S., Alaska, and Canada to the North Pole.

c. When paper forms are used, record on the form the time the flight plan was filed. This time will constitute evidence of the pilot's intention to comply with customs, immigration, and public health requirements and will be made available upon request from these authorities.

6−4−10. ICAO ATS MESSAGE FORMAT

The following are examples of ICAO message types most likely to appear on AFTN/NADIN circuits. The number above the data corresponds to the field type numbers on the flight plan form (FAA Form 7233−4) and on the chart of Standard ATS Messages and Their Composition, Appendix A.

a. Departure message (DEP). ARTCCs are the designated ATS unit responsible for originating and transmitting DEP messages on all IFR aircraft departing airports within their ARTCC boundaries. IFR flight plans must be transmitted to ARTCCs at least one hour before departure. This allows ARTCCs to determine recipients of DEP message when domestic portions are transmitted to ARTCCs in an automated format. Do not hold FPLs and combine with DEP into a single message.

b. Proposed flight plan messages.

1. IFR FPL. ARTCCs are the designated ATS units responsible for originating and transmitting DEP messages on all IFR aircraft departing airports within their ARTCC boundaries. IFR flight plans must be transmitted to ARTCCs at least one hour before departure. This allows ARTCCs to determine recipients of DEP message when domestic portions are transmitted to ARTCCs in an automated format. Do not hold FPLs and combine with DEP into a single message.

2. VFR FPL. The FSS or contracted flight plan filing service is responsible for transmitting DEP messages on VFR aircraft.

c. Delay (DLA) message. Transmitted when departure of an aircraft, for which an FPL message has been transmitted, is postponed or delayed more than 30 minutes after the estimated time of departure contained in the FPL.

d. Alerting (ALR) message. Relating to an overdue situation on an aircraft.

e. Supplementary flight plan (SPL). Information must be sent to ATS units that transmit request supplementary flight plan (RQS) messages.

f. Arrival (ARR) message. Sent only on Canadian MOT, U.S. DOT, or FAA aircraft or upon request.

g. Current flight plan (CPL) message. Originated by and transmitted in a step-by-step mode between successive ACCs and between the last ACC to the control at the airport of intended landing. CPLs contain only information relevant to that portion of the route of flight which extends from the point of entry into the next control area or FIR to the airport of intended landing.

h. Acceptance (ACP) message. Transmitted when the data contained in a CPL message are found to be acceptable to the receiving ACC.

i. Flight plan cancellation (CNL) message. Transmitted when a CPL or filed FPL message was transmitted and the flight is canceled.

6−4−11. FLIGHT PLAN CHANGES AND CANCELLATIONS

a. Assume departure station duties when a flight plan change is received from an aircraft en route to a foreign location.

REFERENCE−
FAA Order JO 7110.10, Para 6−2−11, Major Flight Plan Changes from En Route Aircraft.
FAA Order JO 7110.10, Para 6−2−12, Change in ETA.

b. An FSS receiving a VFR flight plan cancellation report from aircraft en route to a foreign location must transmit a cancellation message to the appropriate foreign tie-in facility.

REFERENCE−
FAA Order JO 7110.10, Para 6−2−13, Flight Plan Closure.

6−4−12. AERONAUTICAL MOBILE COMMUNICATIONS SERVICE

The Aeronautical Mobile Communications Service (AMCS) uses a long-range air/ground communications network to provide high frequency (HF) voice communications to en route aircraft in oceanic airspace in support of ATC. AMCS involves relaying ATC clearances, ATC instructions, and aircraft position reports. The FAA contracts this service to Collins Aerospace to operate two aeronautical radio stations: New York Radio and San Francisco Radio. Flight operators separately hold contracts with Collins to provide aeronautical operational control/dispatch communications services via shorter−range VHF radio transmitters, as well as long−distance operational control via HF radios. FAA FSS may be required to relay information on a case-by-case basis.

6−4−13. AIRCRAFT REPORTS (AIREP)

a. Aircraft reports, or AIREPs, are messages from an aircraft to a ground station. AIREPs are normally comprised of the aircraft's position, time, flight level, ETA over its next reporting point, destination ETA, fuel remaining in time, and meteorological information. When recording an AIREP on data terminals or written copy, the following procedures must be used.

1. Each line must begin at the left margin.

2. A new line must be used for each transmission.

3. If communications allow, each report must contain the following items in the order shown:

(a) Message type aerodrome reference point (ARP).

(b) Call sign of the calling station (aircraft).

(c) Text of the message.

(d) Call sign of the station called or receiving station followed by the appropriate abbreviation to indicate received, read back, or no reply heard.

(e) Call sign of station(s) acknowledging intercept followed by appropriate abbreviation to indicate received.

(f) Designation of frequency used.

EXAMPLE−
**2866QM 8903VO 13300YH*
*2932QI *5631TY 11384XM*
2998QL 6532UA 13294YF
5628TO 10048WH 17904ZC
**For Alaskan domestic use only.*

(g) Time in UTC of the communication.

4. Missing parts of the message text must be indicated by the letter "M."

EXAMPLE−
ARP CPC583 KBRO 2100 F330 MMTM 2128
ETA XMMMX 2248 FUEL 0324
KNEW RB
MMMX R
TO2103

b. AIREPs may be filed from any aircraft in−flight within WMO areas of responsibility in conformity with ICAO requirements for position, operational, or meteorological reporting in AIREP format. AIREP information must be disseminated to ATC, company, and meteorological offices as required. AIREPs consist of three sections comprised of 12 items. AIREPs may be filed in one, two, or three sections as follows:

1. Section 1, routine report. A position report (PSNRP) comprising the Message Type Designator −ARP and the following items:

(a) Item 1, aircraft identification.

(b) Item 2, position. Record position in latitude (degrees as two numerics, or degrees and minutes as four numerics, followed without a space by N or S) and longitude (degrees as three numerics, or degrees and minutes as five numerics, followed without a space by E or W) or as a significant point identified by a coded designator (two-to-five characters) or as a significant point followed by a magnetic bearing (three numerics) and a distance in nautical miles (three numerics) from the point, such as 4620N07805W, 4620N078W, 46N078W, LN, MAY or DUB180040. Precede significant point by ABM (abeam), if applicable.

(c) Item 3, time. Record time in hours and minutes UTC (four numerics). The time recorded must be the actual time of the aircraft at the position and not the time of origination or transmission of the report.

(d) Item 4, flight level or altitude. Record flight level as "F" followed by three numerics when on standard pressure altimeter setting, such as F370. Record altitude in meters followed by M, or in feet followed by "FT," when on QNH. Record "ASC" (level) when climbing, or "DES" (level) when descending to a new level after passing the significant point.

(e) Item 5, next position and time over. Record the next reporting point and the estimated time over such reporting point, or record the estimated position that will be reached one hour later, according to the position reporting procedures in effect. Use the data conventions specified in subparagraph 6−4−13b1(b), Item 2, Position, for position. Record time in minutes past the hour (two numbers) or in hours and minutes UTC (four numbers) when necessary.

EXAMPLE−
PSNRP portion of AIREP prepared by De Ridder and addressed to Canadian Pacific Airlines (CPC) in Toronto and Mexico City:
FF CYYZCPCX MMMXXMZT
122105 KDRIYFYX
ARP CPC583 KBRO 2100 F370 MMTM28
KNEW RB
MMMM R
TO2103

2. Section 2, when reported by the pilot.

(a) Item 6, ETA. Record ETA by the four-letter location indicator of the airport of first intended landing, or if no location indicator exists, the name of the airport followed by the estimated time of arrival at this aerodrome in hours and minutes UTC (four-digit numeric).

(b) Item 7, endurance. Record fuel in hours and minutes (four-digit numeric).

3. Section 3. A full AIREP comprising a PSNRP, company information, and en route meteorological information.

(a) Item 8, air temperature. Record PS (plus) or MS (minus), no space, followed by the temperature in degrees centigrade corrected for instrument error and airspeed, such as MS05.

(b) Item 9, spot wind or mean wind and position. Spot wind is used whenever practicable and normally refers to the position given in subparagraph 6−4−13b1(b), Item 2, position. When a spot wind is given for any other location, record its position. Whenever it is impracticable to record spot wind, record the mean wind between two fixes, followed by the word "mean," and the position of the midpoint between the two fixes. Record wind direction in degrees true (three-digit numeric) and wind speed in knots (two or three-digit numeric), separated by an oblique stroke, such as 345/55. Record the direction of variable winds of a given strength as VRB, such as VRB/10. Record light and variable winds or calm as LV. If wind position is required, record latitude and longitude to the nearest whole degree, using the data convention specified in Item 2, such as 22N180W.

EXAMPLE−
AIREP comprised of PSNRP and aircraft operator information:
FF CYYZCPCX MMMXXMZT
122105 KDRIYFYX
ARP CPC583 KBRO 2100 F370 MMTM28
MMMX 2248 FUEL 0324
KNEW RB
MMMX R
TO2103

(c) Item 10, turbulence (TURB). Record severe turbulence as TURB SEV and moderate turbulence as TURB MOD. If turbulence is experienced in cloud, add INC (in cloud). If in subsonic flight, report severe turbulence as soon as possible after occurrence. This requires AIREP SPECIAL. Record and report moderate turbulence only if encountered within last 10 minutes prior to reaching position in subparagraph 6−4−13b1(b), Item 2, Position. If in transonic or supersonic flight, report severe or moderate turbulence as soon as possible after occurrence. This requires AIREP SPECIAL.

(d) Item 11, icing. Record severe icing as ICE SEV, moderate icing as ICE MOD. Report severe icing as soon as possible after occurrence. This requires AIREP SPECIAL. Record and report moderate icing only if encountered within last 10 minutes prior to reaching position in subparagraph 6−4−13b1(b), Item 2, Position.

(e) Item 12, supplementary information. Record data which in the opinion of the pilot-in-command are of aeronautical interest.

(1) Present weather. Rain (RA), snow (SN), freezing rain (FZRA), funnel cloud (FC) waterspout or tornado (+FC), thunderstorm (TS) on or near flight path, front (FRONT).

(2) Clouds. If heights of cloud bases and/or tops can be accurately ascertained, amount of clouds scattered (SCT) if clear intervals predominate, broken (BKN) if cloud masses predominate, or continuous (CNS) type of clouds only if cumulonimbus (CB), and an indication of the bases (BASE) and/or the tops (TOP) together with the respective height indication F (number) or (number) or (number) M/ or (number) FT.

(3) Turbulence and icing. Moderate turbulence (TURB MOD) if in subsonic flight, or moderate aircraft icing (ICE MOD) observed prior to the last 10 minutes.

(4) D−Value. Reading or radio altimeter minus reading of pressure altimeter set to 1013.2 millibars and corrected for calibration and position error; record differences as plus (PS) or minus (MS), no space, followed by the number of meters or feet.

EXAMPLE−
Full AIREP:
FF CYYZCPCX MMMXXMZT KMIAYMYX 162215 TJSJYFYX ARP CPC583 2709N05415W 2212 F330 23N056W 59 0035 FUEL 0324 M534 310/60 MEAN 2543N05532W TURB MOD ICE MOD SCT CB TOP F280 TJSJ RB TO2214

NOTE−
Transmit to the WMO office serving the FIR where the report is made.

(5) Operationally significant weather radar echoes (echo or echo line). True bearing of center of echo or line and distance from aircraft in nautical miles; if appropriate, indicate weather intensifying or weakening and whether no gaps, some gaps, or frequent gaps are observed.

(6) Significant differences between conditions encountered and those forecast for the flight, such as forecast thunderstorms not observed or freezing rain not forecast.

(7) If the position of the phenomenon reported is not the same as the position given under subparagraph 6−4−13b1(b), Item 2, Position, report it after the phenomenon.

6−4−14. AIREP SPECIALS (ARS)

a. Turbulence. TURB SEV encountered while in subsonic flight is reported as soon as possible after occurrence and requires an AIREP SPECIAL (ARS). TURB MOD is reported only if encountered within 10 minutes prior to reaching reporting position. If in transonic or supersonic flight, TURB MOD and SEV is reported as soon as possible and requires an ARS.

b. Icing. ICE SEV is reported as soon as possible after occurrence and requires an ARS. ICE MOD is reported only if encountered within last 10 minutes prior to reaching reporting position.

EXAMPLE−
FF KMIAYMYX
211538 TJSJYFYX
ARS PAA101 5045N02015W 1536 F310 ASC
F350 51N030W 21 FUEL 0900 ICE SEV

6−4−15. ARTCC RELAY OF VFR MESSAGES

ARTCC operators must relay all international VFR flight movement messages to the adjacent FSS unless that facility is also an addressee.

NOTE−
If an overseas unit erroneously routes a VFR movement message to an ARTCC, the automatic NADIN switch will not divert it to an FSS.

Section 5. Customs Notifications and ADIZ Requirements

6–5–1. FLIGHT PLAN/CUSTOMS REQUIREMENTS

a. U.S. CBP requirements for the APIS authorizations are contained in 19 CFR 122 and apply to both inbound and outbound aircraft. Do not include ADCUS in flight plan remarks; pilots are required to coordinate directly with CBP.

b. Flight plan and customs requirements for other countries are usually contained in that country's AIP.

6–5–2. CUSTOMS REQUIREMENTS FOR INBOUND AND OUTBOUND AIRCRAFT

19 CFR Part 122 contains APIS regulations which require APIS manifests to be submitted to U.S. CBP for all private aircraft arriving from or departing for a foreign port or place. APIS regulations also require that electronic notices of arrival and departure as well as electronic manifests relative to travelers (passengers and crew) be submitted to CBP within specific timeframes. For detailed information on the APIS regulations, see Advance Information on Private Aircraft Arriving and Departing the United States, 73 Fed. Reg. 68,295 (Nov. 18, 2008) (19 CFR 122.22). This publication, along with other resources, is available at http://www.cbp.gov.

a. All aircraft entering U.S. airspace from a foreign port or departing U.S. airspace for a foreign port must provide at least one hour advance notice to the U.S. CBP via the electronic APIS (eAPIS).

b. Pilots of aircraft inbound to the U.S. from a foreign port are required to notify CBP of any changes to their ETA which are 15 minutes or greater. Upon pilot request, relay changes in ETA to CBP.

6–5–3. ADIZ REQUIREMENTS FOR INBOUND AND OUTBOUND AIRCRAFT

a. Unless otherwise authorized by ATC, no person may operate an aircraft into, within, or across an ADIZ unless that person has filed a flight plan with an appropriate aeronautical facility.

b. Unless otherwise authorized by ATC, no person may operate an aircraft into, within, or across an ADIZ unless that aircraft is equipped with a coded radar beacon transponder and automatic pressure altitude reporting equipment having altitude reporting capability that automatically replies to interrogations by transmitting pressure altitude information in 100-foot increments.

NOTE–
This paragraph does not apply to the operation of an aircraft which was not originally certificated with an engine-driven electrical system and which has not subsequently been certified with such a system installed (for example, a balloon or glider).

c. A person who operates a civilian aircraft into an ADIZ must have a functioning two-way radio, and the pilot must maintain a continuous listening watch on the appropriate aeronautical facility's frequency.

d. Pilots of aircraft entering or departing the U.S. through an ADIZ, or operating within an ADIZ, are required to comply with the provisions of 14 CFR 99.

e. Forward information on DVFR aircraft inbound to the U.S. to NORAD via Service B or by telephone. Forward the following information:

1. Aircraft call sign.

2. Number and type of aircraft.

3. Altitude (within ADIZ).

4. True airspeed.

5. Time of departure.

6. Point of departure.

7. Destination.

8. ETA.

9. Remarks: DVFR discrete transponder code; estimated first point of penetration of ADIZ (latitude/longitude or FRD); estimated time of penetration of ADIZ.

EXAMPLE−
1210 135 3442/09345 1446

NOTE−
See paragraph 6−2−3, Control Messages.

Section 6. Canadian Movement and Control Messages (Transborder Flights Only)

6−6−1. GENERAL

Except as indicated in this section, handle Transborder Canadian movement and control messages as described in Chapter 6, Section 1, Section 2, and Section 3. Do not include ADCUS in flight plan remarks for flight plans to Canada because NAV CANADA no longer alerts Canadian Customs. Canada's Private Aircraft Program for Customs (CANPASS) authorizations are the obligation of the pilot, at the number in subparagraph 6−6−3a. Do not include ADCUS in flight plan remarks for flights plans from Canada to the U.S. because U.S. FSSs no longer alert U.S. CBP. U.S. APIS authorizations are the obligation of the pilot for flights departing and entering the U.S., as stated in 19 CFR 122. APIS resources for pilots are available at http://www.cbp.gov.

6−6−2. INBOUNDS FROM CANADA

a. Do not accept VFR flight plans, other than air filed flight plans, for aircraft departing from Canada. Refer individuals to the appropriate NAVCANADA facility to file flight plans out of Canada.

b. The operational system should automatically format the required items of the flight notification message when activated. U.S. CBP authorizations for flights inbound to the U.S. from Canada are the obligation of the pilot and must be obtained via the APIS process. APIS resources for pilots are available at http://www.cbp.gov.

c. Facilities must acknowledge receipt of inbound flight plan and flight data messages as soon as practicable by transmitting a Logical Acknowledgement Message (LAM), suspense VFR flight plans until arrival or closure information is received, and remove IFR messages from the inbound list after delivery.

NOTE−
ATS messages used by FSS are explained in Appendix D.

6−6−3. OUTBOUNDS TO CANADA

a. When Customs notification service is requested, advise the pilot to contact CANPASS at (888) 226−7277 and include CANPASS in the remarks section of the flight plan. If the pilot informs that he/she has contacted CANPASS, place CANPASS in the remarks section of the flight plan.

NOTE−
U.S. CBP authorizations for flights outbound from the U.S. to Canada are the obligation of the pilot and must be obtained via the APIS process. APIS resources for pilots are available at http://www.cbp.gov.

b. Accept customs notification requests from in−flight aircraft for relay via telephone notification to CANPASS at (888) 226−7277 for airports of entry when proposed ETA is during customs service hours.

c. Upon notification of the departure of VFR flights, transmit a departure message (DEP) directly to the destination Canadian relay facility.

d. Suspense ATS flight data message until acknowledgment is received.

REFERENCE−
FAA Order JO 7110.10, Para 3−5−4, Canadian Transborder Flights.

1. If an acknowledgment is not received within 30 minutes after departure, retransmit the message. AISR facilities transmit the contraction "REQ ACP" (request acceptance) and the complete aircraft identification.

EXAMPLE−
FF CZYZZFZX
DTG KBUFYFYX
REQ ACP N711VR

2. If acknowledgment is not received within one hour after departure, use interphone or telephone to deliver. In any event, assure delivery prior to ETA.

3. Refer to Section B of the Canada and North Atlantic IFR Supplements for Canadian FSS and ACC telephone numbers.

e. Do not accept round-robin flight plans to Canada.

6−6−4. OUTBOUNDS TO CANADA DEPARTING FROM OUTSIDE FLIGHT PLAN AREA

a. Accept flight plans regardless of departure point within the NAS.

b. Upon receipt of the departure report, the tie-in SECTOR/FSS is responsible for delivery of the departure message to Canada.

6−6−5. IFR FLIGHT PLANS DEPARTING CANADIAN AIRPORTS

a. Accept IFR flight plans departing from Canadian airports and destined to the U.S. Address messages to the ACC listed in FAA Order JO 7350.9, Location Identifiers.

NOTE−
FSSs in Alaska will still accept Canada to Canada IFR flight plans.

b. Accept IFR flight plans regardless of destination when the departure airport is a Canadian airport where air traffic control services are provided by the FAA.

Section 7. Mexican Movement and Control Messages (Transborder Flights Only)

6–7–1. GENERAL

a. Except as outlined in this section, handle transborder Mexican movement and control messages as described in Chapter 6, Section 1, Section 2, and Section 3. IFR flight plans to Mexico require the ICAO flight plan form.

b. Do not include ADCUS in flight plan remarks for flight plans to Mexico; Mexican Customs authorizations are the obligation of the pilot. Do not include ADCUS in flight plan remarks for flights plans from Mexico to the U.S. because U.S. FSSs no longer alert U.S CBP. U.S. APIS authorizations are the obligation of the pilot for flights departing and entering the U.S., as stated in 19 CFR 122. APIS resources for pilots are available at http://www.cbp.gov.

6–7–2. INBOUNDS FROM MEXICO

a. When received in the proper format, VFR flight notification messages are automatically acknowledged and suspended by the operational system.

b. Acknowledge receipt of a flight notification message as soon as practicable by transmitting the letter R followed by the full aircraft identification.

EXAMPLE–
R N7llVR

c. Suspense VFR flight notification messages until arrival or closure information is received. File IFR messages.

6–7–3. OUTBOUNDS TO MEXICO

a. Mexican customs notification is the obligation of the pilot. U.S. CBP authorizations for flights outbound from the U.S. to Mexico are also the obligation of the pilot and must be obtained via the APIS process. APIS resources for pilots are available at http://www.cbp.gov.

NOTE–
Mexican customs regulations require that only international airports-of-entry may be used for first landing.

REFERENCE–
FAA Order JO 7350.9, Location Identifiers.

1. If the pilot still intends to land at a destination other than an airport-of-entry, advise the pilot that the flight plan will not be used for customs or SAR service in Mexico.

2. Transmit the flight notification message to the regional flight dispatch office, not the destination tie-in station.

NOTE–
If the correct addressee cannot be determined, transmit to the nearest border regional flight dispatch office.

b. VFR flight plans.

1. Upon notification of departure of VFR flights, transmit a flight notification message. Address messages to the ICAO addressee for the appropriate destination location.

2. If a VFR flight plan is filed with a destination other than an airport-of-entry, transmit the flight notification message to the regional flight dispatch office, not the destination tie-in station. If the correct addressee cannot be determined, transmit to the nearest border regional flight dispatch office.

NOTE−
Facilities with interphone/telephone capability may relay flight notification messages by this method.

REFERENCE−
FAA Order JO 7350.9, Location Identifiers.

3. Address messages to the ICAO addressee for the appropriate destination location. Transmit the following information:

(a) Type of flight.

(b) Aircraft identification.

(c) Aircraft type.

(d) Departure point.

(e) Destination.

(f) ETA.

(g) Remarks.

EXAMPLE−
FF MMCUXMXO
DTG KSJTYFYX
VFR N1234S C182 SJT MMCU 1400 4ZUCHERMANN

c. If acknowledgment is not received within 30 minutes after departure, transmit a "request acceptance" message to the destination station tie-in addressee and to the regional flight dispatch office. Manually address the message to the designated regional flight dispatch office.

REFERENCE−
FAA Order JO 7350.9, Location Identifiers.

EXAMPLE−
FF MMCUXMXO MMMYXMXO
REQ ACP N1234S

d. The regional flight dispatch office involved will then normally send an acknowledgment to the departure station and assume responsibility for the flight notification message.

e. If acknowledgment/acceptance is not received within one hour of the departure, use interphone/telephone or other available means to deliver the message to the appropriate regional flight dispatch office. See TBL 6−7−1 for telephone numbers. For a complete address, add "XMXO" to the identifier.

TBL 6−7−1
Mexican Regional Flight Dispatch Office Phone Numbers

Region	Identifier	Telephone Number
CENTRO (Central)	MMMX	01152 5 762−7062 01152 5 784−40−99 ext. 153 01152 5 762−58−77 ext. 153
NORESTE (Northeast)	MMMY	01152 83 454−020 ext. 141
NOROESTE (Northwest)	MMMZ	01152 67 23−114 01152 67 22−075 ext. 140
OCCIDENTE (West)	MMGL	01152 36 890−121 ext. 32 and 167
SURESTE (Southeast)	MMMD	01152 99 231−186 ext. 149

f. Do not accept round-robin flight plans to Mexico.

Chapter 7. NOTAM Services

Section 1. General

7−1−1. DESCRIPTION

The primary task of the NOTAM position is NOTAM management including, but not limited to, the classification, processing, and dissemination of NOTAMs. NOTAM services are provided in accordance with FAA Order 7930.2, Notices to Air Missions (NOTAM), applicable LOAs, and approved local procedures.

NOTE−
The NOTAM position may be combined with the flight data position (or another operational position). See approved local procedures.

7−1−2. ACCOUNTABILITY

a. FSS personnel, regardless of position, must immediately report any situation or condition considered an immediate hazard to flight to the most appropriate air traffic facility. Other situations should be reported on a priority basis to the appropriate accountable organization.

b. FSS specialists must accept all aeronautical information regardless of source or subject matter, provided the occurrence is no more than seven days in the future.

c. The party that originates the NOTAM on behalf of the accountable organization is responsible for the accuracy, origination, and cancellation of the NOTAM.

d. Alaska FSS personnel receiving NOTAM information that requires action by another FSS must forward the information to that FSS for appropriate action as soon as practicable. For example, if Kenai FSS receives a NOTAM for Homer FSS, the Kenai NOTAM specialist will forward it to Homer to issue.

e. The certified source is responsible for the correct classification and format of the NOTAM and for ensuring that facilities affected by the NOTAM are aware of the new NOTAM.

f. FSS specialists are responsible for issuing NOTAMs that are not covered in any example in FAA Order 7930.2, Notices to Air Missions (NOTAM), but meet NOTAM criteria. If, after consulting with management, a format cannot be determined, management should contact the USNOF for assistance.

NOTE−
1. *A certified source or NOTAM originator (for example, airport operator, Tech Ops AIS/service provider, or FSS) is the party who enters/submits a NOTAM to the NOTAM System (NS) on behalf of the accountable organization using an approved direct entry tool or interface.*

2. *An accountable organization is responsible for accurately reporting the condition considered to be a hazard or potential hazard to flight operations. Reporting the condition must be accomplished by ensuring that procedures are developed to establish NOTAM origination and coordination responsibilities.*

REFERENCE−
FAA Order 7930.2, Para 1−3−1, Air Traffic Organization (ATO).

7−1−3. SYSTEM OUTAGES

Follow approved local procedures for scheduled and unscheduled NOTAM system outages.

Section 2. NOTAM Handling

7−2−1. RESPONSIBILITY

Specialists working the NOTAM position must:

a. Provide NOTAM services in accordance with FAA Order 7930.2, Notices to Air Missions (NOTAM), applicable LOAs, and approved local procedures.

b. Have access to the NOTAM processing system(s) applicable to their facility.

c. Ensure that all NOTAM information received is from an authorized source. When potential NOTAM information or an unsafe condition report is received from an unauthorized NOTAM source, handle the information in accordance with FAA Order 7930.2, paragraph 5−1−2, Handling Reported Aerodrome Conditions. Authorized sources include:

1. Airport operators. Authorized personnel list.

2. Air traffic personnel. Facility, position, and operating initials.

3. Other sources (list not all−inclusive).

(a) Certificate of waiver or authorization (COA) or waiver holder, company name, source name.

(b) Tower light operators, company name, source name.

d. Monitor assigned NOTAM system (for example, ENII or NOTAM Manager) and process requests.

e. Process requests received via telephone, regardless of FPA/AOR.

f. Process corrections requested by the USNOF via phone or SVC B.

g. Accept and submit all D−NOTAMs for locations within the NAS.

NOTE−
The USNOF is responsible for monitoring and converting applicable NOTAMs to the international format. No further action is required by the FSS specialist.

h. Check publications (for example, charts, chart supplements, etc.) to avoid duplication of aeronautical information. When new publications/charts become effective, follow the requirements established in FAA Order 7930.2.

i. Establish NOTAM effective dates/times. When a source only provides a beginning date/time, the specialist must clarify an agreed−upon ending date/time prior to issuing the NOTAM. Specialists must ensure the publication process has been initiated prior to selecting PERM as the ending date/time.

REFERENCE−
FAA Order 7930.2, Para 3−1−4, Permanent (PERM) NOTAM Process.

j. Edit and correct requests containing more than one NOTAM.

k. Replace/amend NOTAMs.

NOTE−
Active NOTAMs cannot be changed. The process of replacing/amending a NOTAM requires the cancellation of the existing NOTAM and the issuance of a new NOTAM.

l. Reject NOTAM issuance requests when appropriate (for example, duplicate, request does not meet NOTAM criteria). If there is uncertainty about the data received, the specialist must contact the NOTAM originator prior to rejecting a NOTAM.

m. Coordinate NOTAMs with affected ATC facilities.

1. NOTAM coordination in the CONUS is performed by the ARTCC flight data units.

2. FSS must coordinate NOTAMs with ATC during NOTAM system outages in accordance with local procedures.

7−2−2. RECORDING NOTAM INFORMATION

Specialists must record complete contact information for NOTAM requests received via telephone in the appropriate NOTAM processing system. This information is used during NOTAM validation or when clarification is needed, which could be an extended amount of time after issuance or cancellation.

NOTE−
See approved local procedures for definition of "complete contact information."

Chapter 8. FAA Weather Services

Section 1. Pilot Weather Reports

8−1−1. GENERAL

a. PIREPs are filed at unscheduled times with stations having sending capability to WMSCR for dissemination on the Service A domestic aviation weather system. Timely dissemination of PIREPs alert pilots to significant weather reports and improves aviation forecasts.

b. Personnel must enter PIREPs into the operational system as individual reports, not appended to a surface observation.

c. Changing weather conditions should dictate increased frequency of PIREP solicitation.

NOTE−
PIREPs indicating good weather are valuable and pertinent to aviation weather forecasters and pilots. These include PIREPs indicating a lack of icing or turbulence, and should be disseminated in a timely fashion.

8−1−2. RESPONSIBILITY

a. Actively solicit PIREPs when, in your judgment, a report of actual in-flight conditions is beneficial or when conditions meet criteria for solicitation listed in this section.

b. Assure timely dissemination of the PIREP information.

c. Each facility should make special efforts to solicit PIREPs on departure and arrival weather conditions at airports within their flight plan area.

d. Personnel must not solicit PIREPs when the pilot indicates they are in hazardous weather conditions or during a critical phase of flight.

NOTE−
When in hazardous weather conditions or during a critical phase of flight (takeoff and landing), the pilot's top priority is to keep control of the aircraft. Solicitation of a PIREP may introduce an unnecessary distraction that may compromise safety.

e. Solicit PIREPs for the affected area(s) when one or more of the following weather conditions exist, are reported, or forecast to occur:

1. Ceilings at or below 5,000 feet.

2. Visibility reported on the surface or aloft is five miles or less.

3. Thunderstorms and related phenomenon.

4. Turbulence of moderate degree or greater.

5. Icing of light degree or greater.

6. Wind shear.

7. Braking action reports less than good.

8. Volcanic eruption, ash clouds, and/or detection of sulfur gases in the cabin: hydrogen sulfide (H_2S) or sulfur dioxide (SO_2).

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

(b) The smell of sulfur gases in the cockpit may indicate volcanic activity that has not yet been detected or reported and/or possible entry into an ash−bearing cloud. H_2S, also known as sewer gas, has the odor of rotten eggs. SO_2 is identifiable as the sharp, acrid odor of a freshly struck match.

NOTE−
Pilots may forward PIREPs regarding volcanic activity using the format described in the Volcanic Activity Reporting (VAR) form as depicted in the AIM.

f. Also, solicit PIREPs regardless of weather conditions when:

1. A NWS or ATC facility indicates a need because of a specific weather or flight assistance situation.

2. Necessary to determine flying conditions pertinent to natural hazards (mountain passes, ridges, peaks) between the weather reporting stations.

3. The station is designated as responsible for PIREPs in an offshore coastal area.

g. In-flight specialists must solicit sufficient PIREPs to remain aware of flight conditions.

h. To solicit PIREPs within a specific area, broadcast a request on NAVAIDs, transcribed broadcast facilities, or a selected communications frequency.

PHRASEOLOGY−
PILOT WEATHER REPORTS ARE REQUESTED (location/area). CONTACT (name) RADIO ON (frequency) TO REPORT THESE CONDITIONS.

i. Inform pilots of a need for PIREPs. The following methods may be used to collect PIREPs:

1. During pre-flight weather briefings.

2. On post-flight contacts.

3. During regular air-ground contacts.

4. Broadcast a request on NAVAID frequencies.

5. Request PIREPs from air carrier and military operations offices, military pilot-to-forecaster units, and local aircraft operators.

6. Solicit from other air traffic facilities.

8−1−3. PIREP CLASSIFICATION

Categorize PIREPs as follows:

a. *URGENT*. The following weather phenomena must be classified as an URGENT PIREP (UUA):

1. Tornadoes, funnel clouds, or waterspouts.

2. Severe or extreme turbulence (including clear air turbulence).

3. Severe icing.

4. Hail.

5. Low-level wind shear (LLWS). For the safety of light aircraft, classify low-level wind shear PIREPs as UUA if the pilot reports airspeed fluctuations of 10 knots or more. Classify reports of low-level wind shear with airspeed fluctuations less than 10 knots as routine. If airspeed fluctuation is not reported, classify PIREP as UUA.

NOTE−
Low-level wind shear is defined as wind shear within 2,000 feet of the surface.

6. Volcanic eruption, ash clouds, and/or detection of sulfur gases (H_2S or SO_2) in the cabin.

(a) If a pilot only reported the smell of H_2S or SO_2 in the cabin and confirmed no volcanic ash clouds were present, classify the report as a ROUTINE PIREP.

(b) The smell of sulfur gases in the cockpit may indicate volcanic activity that has not yet been detected or reported and/or possible entry into an ash-bearing cloud. H_2S, also known as sewer gas, has the odor of rotten eggs. SO_2 is identifiable as the sharp, acrid odor of a freshly struck match.

7. Any other weather phenomena reported which are considered by the specialist as being hazardous, or potentially hazardous, to flight operations.

b. *ROUTINE.* Classify as ROUTINE (UA) all PIREPs received except those listed above.

8−1−4. DATA TO BE INCLUDED IN PIREPs

Include the following reports of flight conditions, as appropriate:

a. Height and coverage of cloud bases, tops, and layers.

b. Flight visibility.

c. Restrictions to visibility and weather occurring at altitude.

d. Air temperature and changes to temperature with altitude or range.

e. Direction and speed of wind aloft.

f. Duration and intensity of turbulence.

REFERENCE−
FAA Order JO 7110.10, Para 8−1−6, Reporting Turbulence in PIREPs.

g. Extent, type, and intensity of icing.

REFERENCE−
FAA Order JO 7110.10, Para 8−1−7, Reporting Airframe Icing in PIREPs.

h. Weather conditions and cloud cover through mountain passes and over ridges and peaks.

i. Location, extent, and movement of thunderstorms and/or tornadic activity.

j. Excessive winds aloft, low-level wind shear, and other phenomena bearing on safety and efficiency of flight.

8−1−5. PIREP FORMAT

Using TEIs as described below, prepare PIREPs for system entry in the following format:

a. **UUA** or **UA.** *Message type − urgent or routine PIREP.*

b. **/OV.**

1. *Location in reference to a VHF NAVAID or an airport.* Use the three or four alphanumeric identifier. If appropriate, encode the identifier, then three digits to define a radial and three digits to define the distance in nautical miles.

EXAMPLE−
/OV KJFK
/OV KJFK107080
/OV KFMG233016/RM RNO 10SW

2. *Route segment.* Two or more fixes to describe a route.

EXAMPLE−
/OV KSTL−KMKC
/OV KSTL090030−KMKC045015

3. *Latitude and longitude.* Alternatively, the location may be reported as a latitude and longitude pair (in degrees and minutes) for cases of crewed aircraft flying in overseas/over water locations where it is impracticable for the pilot to report using distance and direction from a NAVAID or airport, or for UAV or UAS flying anywhere in the world. UAV or UAS should not use latitude and longitude for the coastal waters of the U.S., unless it is impracticable to report using distance direction from a NAVAID or an airport.

EXAMPLE−
/OV 3901N 08446W

NOTE–
1. *Latitude is a four-digit number (two digits for degrees followed by two digits for minutes) indicating the latitude of the aircraft, followed by the letter N (North) or S (South). Longitude is a five-digit number (three digits for degrees followed by two digits for minutes) indicating the longitude of the aircraft, followed by the letter E (East) or W (West).*

2. *The location may be translated into plain language or as a VOR/airport reference for clarification or to explain the position during a briefing.*

c. /TM. *Time.* Enter the time that the reported phenomenon occurred or was encountered. Report time in four digits UTC.

EXAMPLE–
/TM 1315

d. /FL. *Altitude/flight level*. Enter the altitude in hundreds of feet (MSL) where the phenomenon was first encountered. If not known, enter UNKN. If the aircraft was climbing or descending, enter the appropriate contraction (DURC or DURD) in the remarks/RM TEI. If the condition was encountered within a layer, enter the altitude range within the appropriate TEI describing the condition.

EXAMPLE–
/FL093
/FL310
/FLUNKN /RM DURC

e. /TP. *Type of aircraft*. Enter the aircraft type. If not known, enter UNKN. Icing and turbulence reports must always include the aircraft type. Do not consolidate observations from numerous aircraft types into one PIREP.

EXAMPLE–
/TP AEST
/TP C150
/TP P28R
/TP UNKN

f. /SK. *Sky condition*. Report height of cloud bases, tops, and cloud coverage as follows:

1. Enter the height of the base of a layer of clouds in hundreds of feet (MSL) using three digits. Enter the top of a layer in hundreds of feet (MSL) preceded by the word "TOP." If reported as clear above the highest cloud layer, enter a space and "SKC" following the reported level.

EXAMPLE–
/SK OVC100–TOP110/ SKC
/SK OVC015–TOP035/OVC230
/SK OVC–TOP085

2. Use authorized contractions for cloud cover.

EXAMPLE–
SKC
FEW
SCT
BKN
OVC

3. Cloud cover amount ranges will be entered with a hyphen and no spaces separating the amounts (for example, BKN–OVC).

EXAMPLE–
/SK SCT–BKN050–TOP100
/SK BKN–OVCUNKN–TOP060/BKN120–TOP150/ SKC

4. Unknown heights are indicated by the contraction UNKN.

EXAMPLE–
/SK OVC065–TOPUNKN

5. If a pilot indicates he/she is in the clouds, enter IMC in the remarks.

EXAMPLE−
/SK OVC065−TOPUNKN /RM IMC

6. When more than one layer is reported, separate layers by a solidus (/).

g. /WX. *Flight visibility and weather.* Report weather conditions encountered by the pilot as follows:

1. Flight visibility, if reported, will be the first entry in the /WX field. Enter as FV followed by a two-digit visibility value rounded down, if necessary, to the nearest whole statute mile and append "SM" (FV03SM). If visibility is reported as unrestricted, enter FV99SM.

2. Enter flight weather types using one or more of the standard surface weather reporting codes contained in TBL 8−1−1.

TBL 8−1−1
Weather Reporting Codes and Types

METAR Code	Type	METAR Code	Type
DRSN/BLSN	Drifting/blowing snow	PRFG	Patchy fog on part of airport
DRDU	Drifting dust	RA/SHRA	Rain/Showers
DRSA	Drifting sand	SA/BLSA	Sand/blowing sand
DZ/FZDZ	Drizzle/freezing drizzle	SS	Sandstorms
DU/BLDU	Dust/blowing dust	MIFG	Shallow fog
DS	Duststorm	SHGS	Snow pellet showers
FG	Fog (vis < 5/8SM)	GS	Snow pellets
FZFG	Freezing fog	FU	Smoke
FZRA	Freezing rain	SG	Snow grains
FC	Funnel cloud	SN/SHSN	Snow/Showers
GR	Hail	PY	Spray
SHGR	Hail shower	SQ	Squalls
HZ	Haze	TS	Thunderstorm
IC	Ice Crystals	+FC	Tornado/Waterspout
PL/SHPL	Ice pellets/showers	UP	Unknown precipitation
BR	Mist (vis 5/8SM or more)	VA	Volcanic ash (incl. eruption, H_2S or SO_2)
BCFG	Patchy fog	PO	Well-developed dust/sand whirls

3. Intensity of precipitation (− for light, no qualifier for moderate, and + for heavy) must be indicated with precipitation types, except ice crystals and hail, including those associated with a thunderstorm and those of a showery nature.

4. Intensity of obscurations must be ascribed as moderate or + heavy for dust and sand storms only. No intensity for blowing dust, blowing sand, or blowing snow.

EXAMPLE−
/WX FV01SM +DS000−TOP083/ SKC /RM DURC

5. When more than one form of precipitation is combined in the report, the dominant type must be reported first.

EXAMPLE−
/WX FV00SM +TSRAGR

6. When FC is entered in /WX, FUNNEL CLOUD is spelled out on /RM. When +FC is entered in /WX, TORNADO or WATERSPOUT is spelled out in the /RM TEI.

EXAMPLE−
/WX FC /RM FUNNEL CLOUD
/WX +FC /RM TORNADO or WATERSPOUT

7. State the size of the hail in remarks in ¼" increments or any hail less than ¼" is stated as "GR less than ¼".

8. The proximity qualifier VC (Vicinity) is only used with TS, FG, FC, +FC, SH, PO, BLDU, BLSA, and BLSN.

EXAMPLE−
/WX FV02SM BLDU000−TOP083 VC W

9. When more than one type of weather is reported enter in the following order: 1) TORNADO, WATERSPOUT, OR FUNNEL CLOUD; 2) Thunderstorm with or without associated precipitation; 3) Weather phenomena in order of decreasing predominance. No more than three groups in a single PIREP.

10. Weather layers must be entered with the base and/or top of the layer when reported. Use the same format as in the /SK TEI.

EXAMPLE−
/WX FU002−TOP030

h. /TA. *Air Temperature*. Report outside air temperature using two digits in degrees Celsius. Prefix negative temperatures with an M (for example, /TA 08 or /TA M08).

i. /WV. *Wind direction and speed*. If reported, wind direction from which the wind is blowing must be coded using three figures. Directions less than 100 degrees must be preceded by a "0". For example, a wind direction of 90 degrees is coded as 090. The wind speed must be entered as a two or three digit group immediately following the wind direction. The speed must be coded in whole knots using the hundreds digit (if not zero) and the tens and units digits. The wind group always ends with "KT" to indicate that winds are reported in knots. Speeds of less than 10 knots must be coded using a leading zero. For example, a wind speed of 8 knots must be coded 08KT and a wind speed of 112 knots must be coded as 112KT.

EXAMPLE−
/WV 28080KT
/WV 28008KT
/WV 280105KT

j. /TB. *Turbulence.* Report intensity, type, and altitude as follows:

1. *Intensity.* Enter duration if reported by the pilot (INTMT, OCNL, CONS) and intensity using contractions LGT, MOD, SEV, or EXTRM. Separate a range or variation of intensity with a hyphen (for example, MOD−SEV). If turbulence was not encountered, enter NEG.

2. *Type.* Enter CAT or CHOP if reported by the pilot.

3. *Altitude.* Report altitude only if it differs from value reported in /FL. When a layer of turbulence is reported, separate height values with a hyphen. If lower or upper limits are not defined, use BLO or ABV.

EXAMPLE−
/TB LGT 040
/TB MOD−SEV BLO 080
/TB MOD−SEV CAT 350
/TB NEG 120−180
/TB MOD CHOP 220/NEG 230−280
/TB MOD CAT ABV 290

k. IC. *Icing*. Report intensity, type and altitude of icing as follows:

1. *Intensity.* Enter intensity first using contractions TRACE, LGT, MOD, or SEV. Separate reports of a range or variation of intensity with a hyphen. If icing was not encountered, enter NEG.

2. *Type.* Enter the reported icing type as RIME, CLR, or MX.

3. *Altitude.* Enter the reported icing/altitude only if different from the value reported in the /FL TEI. Use a hyphen to separate reported layers of icing. Use ABV or BLO when a layer is not defined.

EXAMPLE–
/IC LGT−MOD MX 085
/IC LGT RIME
/IC MOD RIME BLO 095
/IC SEV CLR 035−062

4. When icing is reported always report temperature in the /TA TEI.

l. /RM. *Remarks*. Use this TEI to report a phenomena which is considered important but do not fit in any of the other TEIs. This includes, but is not limited to, wind shear (including low-level wind shear) reports, thunderstorm lines, coverage and movement, size of hail (¼" increments), lightning, clouds observed but not encountered, geographical or local description of where the phenomenon occurred, International Standard Atmospheric (ISA) reports and contrails. Report hazardous weather first.

1. *Wind shear.*

(a) Describe wind shear to the extent possible (see paragraph 8−1−8).

(b) Wind shear (including low-level wind shear) may be reported as plus (+), minus (−), or both (+/−) depending on how it affects the aircraft.

(c) If the location and/or altitude are different than the /OV and/or /FL fields, include the location and/or altitude in the remarks.

(d) When low-level wind shear is reported, enter it as the first remark in the /RM TEI.

EXAMPLE–
/RM LLWS +/−15 KT SFC−008 DURC RY22 JFK

2. *FUNNEL, CLOUD, TORNADO, and WATERSPOUT* are entered with the direction of movement if reported.

EXAMPLE–
/RM TORNADO E MOV E

3. *Thunderstorm*. Enter coverage (ISOL, FEW, SCT, NMRS) and description (LN,BKN LN,SLD LN) if reported. Follow with "TS," the location and movement, and the type of lightning if reported.

EXAMPLE–
/RM NMRS TS S MOV E GR1/2

4. *Lightning*. Enter frequency (OCNL, FRQ, CONS), followed by type (LTGIC, LTGCC, LTGCG, LTGCA, or combinations), if reported.

EXAMPLE–
/RM OCNL LTGICCG

5. *Electric discharge*. Enter DISCHARGE followed by the altitude.

EXAMPLE–
/RM DISCHARGE 120

6. *Clouds*. Use remarks when clouds can be seen but were not encountered and reported in /SK.

EXAMPLE–
/RM CB E MOV N
/RM OVC BLO

7. *Volcanic activity.* Volcanic eruption, ash clouds, and/or sulfur gases are urgent PIREPs. Reports of volcanic activity must include as much information as possible (for example, the name of the mountain, ash clouds observed and their movement, the height of the top and bottom of the ash clouds, etc.).

(a) If a pilot detected the smell of sulfur gases (H_2S or SO_2) in the cabin and reported volcanic ash clouds, include "VA" in Weather and "H2S," "SO2," or "SULFUR SMELL" in remarks.

NOTE–
The smell of sulfur gases in the cockpit may indicate volcanic activity that has not yet been detected or reported and/or possible entry into an ash-bearing cloud. H_2S, also known as sewer gas, has the odor of rotten eggs. SO_2 is identifiable as the sharp, acrid odor of a freshly struck match.

EXAMPLE–
UUA /OV PANC240075 /TM 2010 /FL370/TP DC10 /WX VA /RM VOLCANIC ERUPTION 2008Z MT AUGUSTINE ASH 40S MOV SSE SO2

(b) If a pilot only detected the smell of sulfur gases (H_2S or SO_2) in the cabin and confirmed there were no volcanic ash clouds, classify the PIREP as Routine and include "VA" in Weather and "H2S NO ASH," "SO2 NO ASH," or "SULFUR SMELL NO ASH" in Remarks.

EXAMPLE–
UA /OV PANC240075 /TM 2010 /FL370/TP DC10 /WX VA /RM SULFUR SMELL NO ASH

(c) If a volcanic activity report is received from other than a pilot, enter Aircraft "UNKN," Flight Level "UNKN," and in Remarks "UNOFFICIAL."

8. *Plain language*. If specific phraseology is not adequate, use plain language to describe the phenomena or local geographic locations. Include remarks that do not fit in other TEIs like DURC, DURD, RCA, TOP, TOC, or CONTRAILS.

EXAMPLE–
/RM BUMPY VERY ROUGH RIDE
/RM CONTRAILS /UA/OV BIS270030/TM 1445/FL060/TP CVLT/TB LGT /RM Donner Summit Pass

9. When a PIREP from a pilot identifying themselves as a "SKYSPOTTER" aircraft is received, personnel must include the additional comment "/AWC" at the end of the remarks section of the PIREP.

NOTE–
The "SKYSPOTTER" program is a result of a recommendation from the Safer Skies FAA/INDUSTRY Joint Safety Analysis and Implementation Teams. The term "SKYSPOTTER" indicates that a pilot has received specialized training in observing and reporting in-flight weather phenomena or PIREPs.

EXAMPLE–
PIREP Text/RM Text/AWC

10. If ISA is reported.

EXAMPLE–
/RM ISA −10C

8−1−6. REPORTING TURBULENCE IN PIREPs

a. Turbulence reports must include location, time (UTC), altitude/FL or range of altitudes, aircraft type, intensity, duration (occasional, intermittent, and continuous), and whether in clouds or clear air. The degree of turbulence, intensity, and duration is determined by the pilot.

b. Turbulence intensity based on aircraft reaction.

1. *Light turbulence.* Turbulence that momentarily causes slight, erratic changes in altitude and/or attitude (pitch, roll, yaw).

2. *Light chop.* Turbulence that causes slight, rapid and somewhat rhythmic bumpiness without appreciable changes in altitude or attitude.

3. *Moderate turbulence.* Turbulence that is similar to "light turbulence" but of greater intensity. Changes in altitude and/or attitude occur but the aircraft remains in positive control at all times. It usually causes variations in indicated airspeed.

4. *Moderate chop.* Turbulence that is similar to "light chop" but of greater intensity. It causes rapid bumps or jolts without appreciable changes in aircraft altitude or attitude.

5. *Severe turbulence.* Turbulence that causes large, abrupt changes in altitude and/or attitude. It usually causes large variations in indicated airspeed. Aircraft may be momentarily out of control.

6. *Extreme turbulence.* Turbulence in which the aircraft is violently tossed about and is practically impossible to control. It may cause structural damage.

c. High level turbulence (normally above 15,000 feet MSL) not associated with cumuliform cloudiness, including thunderstorms, should be reported as CAT preceded by the appropriate intensity, or light or moderate chop.

8−1−7. REPORTING AIRFRAME ICING IN PIREPs

a. Icing reports must include location, time (UTC), altitude/FL or range of altitudes, aircraft type, outside air temperature, intensity, and type of icing.

b. Icing types.

1. *Rime ice*. Rough, milky, opaque ice formed by the rapid freezing of small supercooled water drops/droplets after they strike the aircraft. The rapid freezing results in air being trapped, giving the ice its opaque appearance and making it porous and brittle. Rime ice is more regular in shape and conformal to the airfoil than glaze ice.

2. *Clear ice (also known as glaze ice)*. Ice, sometimes clear and smooth but usually containing some air pockets, which results in a lumpy translucent appearance. Clear ice results from supercooled drops/droplets striking a surface but not freezing rapidly on contact. It is denser, harder, and sometimes more transparent than rime ice. With larger accretions, the ice shape typically includes "horns" protruding from unprotected leading edge surfaces. It is the shape, rather than the clarity or color, which is most likely to be accurately assessed from the cockpit.

3. *Mixed*. Simultaneous appearance or a combination of rime and glaze ice characteristics. Since the clarity, color, and shape of the ice will be a mixture of rime and glaze characteristics, accurate identification of mixed ice from the cockpit may be difficult.

c. Icing intensity.

1. *Trace.* Ice becomes noticeable. The rate of accumulation is slightly greater than the rate of sublimation. A representative accretion rate for reference purposes is less than ¼ inch (6 mm) per hour on the outer wing. The pilot should consider exiting the icing conditions before they become worse.

2. *Light.* The rate of ice accumulation requires occasional cycling of manual deicing systems to minimize ice accretions on the airframe. A representative accretion rate for reference purposes is ¼ inch to 1 inch (0.6 to 2.5 cm) per hour on the unprotected part of the outer wing. The pilot should consider exiting the icing condition.

3. *Moderate.* The rate of ice accumulation requires frequent cycling of manual deicing systems to minimize ice accretions on the airframe. A representative accretion rate for reference purposes is 1 to 3 inches (2.5 to 7.5 cm) per hour on the unprotected part of the outer wing. The pilot should consider exiting the icing condition as soon as possible.

4. *Severe.* The rate of ice accumulation is such that ice protection systems fail to remove the accumulation of ice and ice accumulates in locations not normally prone to icing, such as areas aft of protected surfaces and any other areas identified by the manufacturer. A representative accretion rate for reference purposes is more than 3 inches (7.5 cm) per hour on the unprotected part of the outer wing. By regulation, immediate exit is required.

NOTE–
Severe icing is aircraft dependent, as are the other categories of icing intensity. Severe icing may occur at any ice accumulation rate when the icing rate or ice accumulations exceed the tolerance of the aircraft.

8–1–8. REPORTING WIND SHEAR IN PIREPs

a. Wind shear is aircraft dependent.

b. Wind shear reports must include location, time (UTC), altitude/FL or range of altitudes, aircraft type, and description of wind shear. If the location and/or altitude is different than the /OV and/or /FL fields, include the location and/or altitude in the remarks.

c. Wind shear may be reported as plus (+), minus (–), or both (+/–) depending on how it affects the aircraft.

d. Wind shear descriptions.

1. *Severe wind shear.* A rapid change in wind direction or velocity which causes airspeed changes greater than 15 knots and/or vertical speed changes greater than 500 feet per minute.

2. *Low-level wind shear.* Wind shear within 2,000 feet of the surface. When low-level wind shear is reported, enter it as the first remark in the /RM TEI.

3. *Vertical wind shear.* Wind shear in a vertical direction.

4. *Increasing headwind shear.* Wind shear in which headwind increases causing an airspeed increase.

5. *Decreasing headwind shear.* Wind shear in which headwind decreases causing an airspeed loss.

6. *Decreasing tailwind shear.* Wind shear in which tailwind decreases causing an airspeed increase.

7. *Increasing tailwind shear.* Wind shear in which tailwind increases causing an airspeed loss.

8–1–9. PIREP HANDLING

a. Record PIREP data directly into the operational system, on FAA Form 7110–2, or on other material deemed appropriate (for example, 5" x 8" plain paper).

b. Upon receipt of a PIREP, accomplish the following:

1. ***Urgent.***

(a) Deliver to the ARTCC weather coordinator as soon as possible.

(b) Enter into the operational system or on Service A as soon as possible.

(c) Use in weather briefings, as appropriate.

2. ***Routine.***

(a) Transmit through the operational system or Service A as soon as practicable.

(b) Use in weather briefings, as appropriate.

c. To assure proper dissemination of PIREPs to all system users, the encoding procedures listed below must be followed:

1. Identify each element by a TEI.

2. Ensure each report includes TEIs for message type, location, time, altitude/flight level, aircraft type, and at least one other to describe the reported phenomena.

3. Precede each TEI, except message type, with a space and a solidus (/).

4. Follow each TEI, except altitude/flight level, with a space.

5. Insert zeros in reported values when the number of digits in the report is less than the number required by the format.

6. Use only authorized aircraft designators and contractions.

7. In the location TEI, include any three character alphanumeric identifier to describe locations or routes. Use only authorized identifiers from FAA Order JO 7350.9, Location Identifiers.

8. Omit entries of TEIs, except as listed in subparagraph 8−1−9c2, for which no data was reported.

d. PIREPs must be coded to ensure the PIREP is stored and subsequently distributed with the surface observation location nearest the condition being reported. If more than one METAR location is appropriate, select the location that provides the greatest distribution and/or prominence, such as a major hub airport.

Section 2. Surface Weather Observations

8−2−1. GENERAL

a. The FAA's Surface Weather Observer Program is a component of the NAS. It combines with other elements of the NAS to ensure the overall safety of air transportation services.

b. FAA is responsible for certifying all aviation weather observers at FAA−sponsored stations, in one or more of the following observer types:

1. FAA contract weather observers.

2. Limited aviation weather reporting station observers.

3. Non-federal observation program observers.

4. Tower visibility observers.

8−2−2. RESPONSIBILITY

FSS where personnel provide backup/augmentation of automated weather observations, or take manual observations, must use FAA Order JO 7900.5, Surface Weather Observing, as the basic source of guidance for completion of observations. This order provides the practices, procedures, and responsibilities for weather observation services including observations taken to fulfill requirements for augmentation or minimum operational requirements during backup. It also describes the various types of surface observations and prescribes the criteria for taking SPECI observations.

8−2−3. WEATHER OBSERVATION CERTIFICATE

a. Before assuming full responsibility for taking any type of surface observation or any part thereof, all personnel required to take weather observations must be certified by FAA in accordance with the criteria defined in FAA Order JO 7900.5, Surface Weather Observing.

b. Required currency shall be maintained by taking observations at a weather reporting location.

c. Currency records will be maintained in accordance with FAA Order JO 3120.4, Air Traffic Technical Training, FAA Order JO 7900.5, Surface Weather Observing, and local directives.

8−2−4. NONAVIATION WEATHER SERVICES

a. FAA must not be responsible for providing weather information unless it is directly related to the actual or intended operation of aircraft.

b. Personnel must not encourage nor solicit nonaviation weather activity.

Section 3. Aviation Weather Cameras

8–3–1. GENERAL

The FAA Weather Camera Program features an expanding network of hundreds of camera sites in Alaska, the CONUS, and Hawaii and over 175 sites hosted by NAV Canada, Canada's civil air navigation service provider. Weather cameras provide pilots in certain areas with snapshots of current conditions at a specific location, enabling pilots to have additional information for improved decision-making.

8–3–2. DESCRIPTION

Each aviation weather camera site has up to four cameras. The direction of each camera is provided with reference to a sectional chart. A "clear day" image is provided for reference and comparison with the latest image. Locations with cameras are marked on sectional charts and listed in the Chart Supplement Alaska, Section 2, Airport/Facility Directory, as well as under Section 4, Associated Data, FAA Aviation Camera Locations.

8–3–3. AVAILABILITY

Camera images are available on the FAA's Aviation Weather Camera website at https://weathercams.faa.gov/. Images are generally updated every 10 minutes. The time of the last update is indicated on each image. Actual site conditions may differ from displayed images due to a variety of reasons (for example, rapidly changing weather conditions, image update frequency, and optical distortion). The images are used to improve situational awareness. They are not to be used to comply with regulatory requirements (for example, to determine weather minimums for IFR flight).

8–3–4. FAA's AVIATION WEATHER CAMERA WEBSITE

In addition to the aviation weather cameras, the website offers the following information that pilots may use for flight planning:

a. Weather advisories including AIRMETs and SIGMETs.

NOTE–
AIRMETs and SIGMETs are only available for the CONUS.

b. Current information such as METARs, PIREPs, infrared satellite imagery, radar data, air temperatures, relative humidity, and wind information.

c. Forecast information such as TAFs.

d. Aeronautical information such as VFR planning, terminal area, IFR en route (low), and IFR en route (high) charts, TFRs, remote communication outlets (RCO) information (Alaska only), and airport information.

Section 4. Future FAA Weather Services

8–4–1. GENERAL

FAA is committed to offering the resources necessary to ensure the safety and efficiency of the NAS. The Flight Service Directorate is dedicated to deliver the tools needed to fulfill required pre-flight actions under 14 CFR 91, 91.103, which states, “[e]ach pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight.”

8–4–2. POTENTIAL SERVICES

a. Visual Weather Observation System

b. Visibility Estimation Through Image Analytics

c. Common Support Services – Weather

Appendix A. FAA Form 7233−4, International Flight Plan

a. The FAA will accept a flight plan in international format for IFR, VFR, SFRA, and DVFR flights. File the flight plan electronically via a Flight Service Station (FSS), FAA contracted flight plan filing service, or other commercial flight plan filing service. Depending on the filing service chosen, the method of entering data may be different but the information required is generally the same.

b. The international flight plan format is mandatory for:

1. Any flight plan filed through a FSS or FAA contracted flight plan filing service; with the exception of Department of Defense flight plans and civilian stereo route flight plans, which can still be filed using the format prescribed in FAA Form 7233−1.

NOTE−
DoD Form DD−175 and FAA Form 7233−1 are considered to follow the same format.

2. Any flight that will depart U.S. domestic airspace. For DoD flight plan purposes, offshore Warning Areas may use FAA Form 7233−1 or military equivalent.

3. Any flight requesting routing that requires Performance Based Navigation.

4. Any flight requesting services that require filing of capabilities only supported in the international flight plan format.

c. Flight Plan Contents

1. A flight plan will include information shown below:

(a) Flight Specific Information (TBL A−1)

(b) Aircraft Specific Information (TBL A−19)

(c) Flight Routing Information (TBL A−20)

(d) Flight Specific Supplementary Information (Item 19)

2. The tables indicate where the information is located in the international flight plan format, the information required for U.S. domestic flights, and the location of equivalent information in the domestic flight plan format.

3. International flights, including those that temporarily leave domestic U.S. airspace and return, require all applicable information in the international flight plan. Additional information can be found in ICAO Doc. 4444 (Procedures for Air Navigation Services, Air Traffic Management), and ICAO Doc. 7030 (Regional Supplemental Procedures) as well as the Aeronautical Information Publications (AIPs), Aeronautical Information Circulars (AICs), and NOTAMs of applicable other countries.

TBL A−1

Flight-Specific Information

Item	International Flight Plan (FAA Form 7233−4)	Domestic U.S. Requirements	Equivalent Item on Domestic Flight Plan (FAA Form 7233−1)
Aircraft Identification	Item 7	Required	Item 2
Flight Rules	Item 8	Required	Item 1
Type of Flight	Item 8	No need to file for domestic U.S. flight	N/A
Equipment and Capabilities	Item 10 Item 18 PBN/; NAV/; COM/; DAT/; SUR/	Required	Item 3
Date of Flight	Item 18 DOF/	Include when date of flight is not today	N/A
Reasons for Special Handling	Item 18 STS/; RMK/	Include when special category is applicable	Item 11
Remarks	Item 18 RMK/	Include when necessary	Item 11
Operator	Item 18 OPR/	No need to file for domestic U.S. flight	N/A
Flight Plan Originator	Item 18 ORGN/	No need to file for domestic U.S. flight	N/A

d. Instructions for Flight-Specific Information Items

1. Aircraft Identification (Item 7) Aircraft Identification is always required. Aircraft identification must not exceed seven alphanumeric characters and be either:

(a) The ICAO designator for the aircraft operating agency, followed by the flight identification (for example, KLM511, NGA213, JTR25). When in radiotelephony the call sign to be used by the aircraft will consist of the ICAO telephony designator for the operating agency followed by the flight identification (for example, KLM511, NIGERIA213, JESTER25);

(b) The nationality or common mark and registration of the aircraft (for example, EIAKO, 4XBCD, N2567GA), when:

(1) In radiotelephony, the call sign to be used by the aircraft will consist of this identification alone (for example, CGAJS) or preceded by the ICAO telephony designator for the aircraft operating agency (for example, BLIZZARD CGAJS); or

(2) The aircraft is not equipped with radio.

NOTE−
1. *Standards for nationality, common and registration marks to be used are contained in Annex 7, Chapter 2.*

2. *Provisions for using radiotelephony call signs are contained in Annex 10, Volume II, Chapter 5. ICAO designators and telephony designators for aircraft operating agencies are contained in Doc 8585—Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services.*

NOTE−
Some countries' aircraft identifications begin with a number, which cannot be processed by U.S. ATC automation. The FAA will add a leading letter temporarily to gain automation acceptance for aircraft identifications that begin with a numeral. For flight-processing systems (e.g., ERAM or STARS) which will not accept a call sign that begins with a number, if the call sign is 6 characters or less, add a Q at the beginning of the call sign. If the call sign is 7 characters, delete the first character and replace it with a Q. Put the original call sign in the remarks section of the flight plan.

EXAMPLE−
9HRA becomes Q9HRA
5744233 becomes Q744233

2. Flight Rules (Item 8a)

(a) Flight rules are always required.

(b) Flight rules must indicate IFR (I) or VFR (V).

(c) For composite flight plans, submit separate flight plans for the IFR and VFR portions of the flight. Specify in Item 15 the point or points where change of flight rules is planned. The IFR plan will be routed to ATC, and the VFR plan will be routed to a Flight Service for Search and Rescue services.

NOTE−
The pilot is responsible for opening and closing the VFR flight plan. ATC does not have knowledge of a VFR flight plan's status.

3. Type of Flight (Item 8b)

(a) The type of flight is optional for flights remaining wholly within U.S. domestic airspace.

(b) Indicate the type of flight as follows:

- G − General Aviation
- S − Scheduled Air Service
- N − Non-Scheduled Air Transport Operation
- M − Military
- X − other than any of the defined categories above

4. Equipment and Capabilities (Item 10, Item 18 NAV/, COM/, DAT/, SUR/)

(a) Equipment and capabilities that can be filed in a flight plan include:

- Navigation capabilities in Item 10a, Item 18 PBN/, and Item 18 NAV/
- Voice communication capabilities in Item 10a and Item 18 COM/
- Data communication capabilities in Item 10a and Item 18 DAT/
- Approach capabilities in Item 10a and Item 18 NAV/
- Surveillance capabilities in Item 10b and Item 18 SUR/

(b) Codes allowed in Item 10a are shown in TBL A−2. Codes allowed in Item 10b are shown in TBL A−3. Codes recognized in Item 18 NAV/, COM/, DAT/ and SUR/ are shown in TBL A−4. Note that other service providers may define additional allowable (and required) codes for use in Item 18 NAV/, COM/, DAT/, or SUR/. Codes to designate PBN capability are described in TBL A−5.

Radio communication, navigation and approach aid equipment and capabilities

ENTER one letter as follows:

N if no COM/NAV/approach aid equipment for the route to be flown is carried, or the equipment is unserviceable,

OR

S if standard COM/NAV/approach aid equipment for the route to be flown is carried and serviceable (see Note 1),

AND/OR

ENTER one or more of the following letters from TBL A−2 to indicate the serviceable COM/NAV/ approach aid equipment and capabilities available.

TBL A−2

Item 10a Navigation, Communication, and Approach Aid Capabilities

A	GBAS Landing System	J7	CPDLC FANS 1/A SATCOM (Iridium)
B	LPV (APV with SBAS)	K	MLS
C	LORAN C	L	ILS
D	DME	M1	ATC SATVOICE (INMARSAT)
E1	FMC WPR ACARS	M2	Reserved
E2	D−FIS ACARS	M3	ATC RTF (Iridium)
E3	PDC ACARS	O	VOR
F	ADF	P1	CPDLC RCP 400 (see Note 7)
G	GNSS (see Note 2)	P2	CPDLC RCP 240 (see Note 7)
H	HF RTF	P3	SATVOICE RCP 400 (see Note 7)
I	Inertial Navigation	P4−P9	Reserved for RCP
J1	CPDLC ATN VDL Mode 2 (see Note 3)	R	PBN Approved (see Note 4)
J2	CPDLC FANS 1/A HFDL	T	TACAN
J3	CPDLC FANS 1/A VDL Mode A	U	UHF RTF
J4	PDLC FANS 1/A Mode 2	V	VHF RTF
J5	CPDLC FANS 1/A SATCOM (INMARSAT)	W	RVSM Approved
J6	Reserved	X	MNPS Approved/North Atlantic (NAT) High Level Airspace (HLA) approved
		Y	VHF with 8.33 kHz Channel Spacing Capability
		Z	Other equipment carried or other capabilities (see Note 5)

Any alphanumeric characters not indicated above are reserved.

NOTE−
1. *If the letter "S" is used, standard equipment is considered to be VHF RTF, VOR, and ILS, unless another combination is prescribed by the appropriate ATS authority.*
2. *If the letter "G" is used, the types of external GNSS augmentation, if any, are specified in Item 18 following the indicator NAV/ and separated by a space.*

EXAMPLE−
NAV/SBAS

3. *See RTCA/EUROCAE Interoperability Requirements Standard for ATN Baseline 1 (ATN B1 INTEROP Standard − DO−280B/ED−110B) for data link services air traffic control clearance and information/air traffic control communications management/air traffic control microphone check.*
4. *If the letter "R" is used, the performance-based navigation levels that can be met are specific in Item 18 following the indicator PBN/. Guidance material on the application of performance-based navigation to a specific route segment, route, or area is contained in the Performance-based Navigation (PBN) Manual (Doc 9613).*
5. *If the letter "Z" is used, specify in Item 18 the other equipment carried or other capabilities, preceded by COM/, NAV/, and/or DAT, as appropriate.*
6. *Information on navigation capability is provided to ATC for clearance and routing purposes.*
7. *Guidance on the application of performance-based communication, which prescribes RCP to an air traffic service in a specific area, is contained in the Performance-based Communication and Surveillance (PBCS) Manual (Doc 9869).*

TBL A−3

Item 10b Surveillance Capabilities

ENTER "N" if no surveillance equipment for the route to be flown is carried, or the equipment is unserviceable,

or

ENTER One or more of the following descriptors, to a maximum of 20 characters, to describe the serviceable surveillance equipment and/or capabilities on board.

ENTER no more than one transponder code (Modes A, C, or S)

SSR Modes A and C:

A	Transponder	Mode A (4 digits − 4096 codes)
C	Transponder	Mode A (4 digits − 4096 codes) and Mode C

SSR Mode S:

E	Transponder	Mode S, including aircraft identification, pressure-altitude, and extended squitter (ADS−B) capability
H	Transponder	Mode S, including aircraft identification, pressure-altitude, and enhanced surveillance capability
I	Transponder	Mode S, including aircraft identification, but no pressure-altitude capability
L	Transponder	Mode S, including aircraft identification, pressure-altitude, extended squitter (ADS−B), and enhanced surveillance capability
P	Transponder	Mode S, including pressure-altitude, but no aircraft identification capability
S	Transponder	Mode S, including both pressure-altitude and aircraft identification capability
X	Transponder	Mode S, with neither aircraft identification nor pressure-altitude

NOTE−
Enhanced surveillance capability is the ability of the aircraft to down-link aircraft derived data via Mode S transponder.

ADS−B:

B1	ADS−B with dedicated 1090 MHz ADS−B "out" capability
B2	ADS−B with dedicated 1090 MHz ADS−B "out" and "in" capability
U1	ADS−B with "out" capability using UAT
U2	ADS−B with "out" and "in" capability using UAT
V1	ADS−B with "out" capability using VDL Mode 4
V2	ADS−B with "out" and "in" capability using VDL Mode 4

NOTE−
File no more than one code for each type of capability, e.g., file B1 or B2 and not both.

ADS−C:

D1	ADS−C with FANS 1/A capabilities
G1	ADS−C with ATN capabilities

Alphanumeric characters not included above are reserved.

EXAMPLE−
ADE3RV/HB2U2V2G1

NOTE−
1. *The RSP specification(s), if applicable, will be listed in Item 18 following the indicator SUR/, using the characters "RSP" followed by the specifications value. Currently RSP180 and RSP400 are in use.*
2. *List additional surveillance equipment or capabilities in Item 18 following the indicator SUR/.*

TBL A−4

Item 18 NAV/, COM/, DAT/, and SUR/ capabilities used by FAA

Item	Purpose	Entry	Explanation
NAV/ entries used by FAA	Radius-to-Fix (RF) capability	Z1	RNP-capable flight is authorized for Radius-to-Fix operations.
	Fixed Radius Transitions (FRT)	Z2	RNP-capable flight is authorized for Fixed Radius Transitions.
	Time of Arrival Control (TOAC)	Z5	RNP-capable flight is authorized for Time of Arrival Control.
	Advanced RNP (A−RNP)	P1	Flight is authorized for A−RNP operations.
	Helicopter RNP 0.3	R1	Flight is authorized for RNP 0.3 operations (pertains to helicopters only).
	RNP 2 Continental	M1	Flight is authorized for RNP 2 continental operations.
	RNP 2 Oceanic/Remote	M2	Flight is authorized for RNP 2 oceanic/remote operations.
COM/ entries used by FAA	N/A	N/A	The FAA currently does not use any entries in COM/.
DAT/ entries used by FAA	Capability and preference for delivery of pre-departure clearance	Priority number followed by: • FANS • FANSP • PDC • VOICE	Entries are combined with a priority number, for example; 1FANS2PDC means a preference for departure clearance delivered via FANS 1/A; with capability to also receive the clearance via ACARS PDC. FANS = FANS 1/A DCL FANSP = FANS 1/A+ DCL PDC = ACARS PDC VOICE = PDC via voice (no automated delivery)
SUR/ entries used by FAA	Req. Surveillance Performance	RSP180	Aircraft is authorized for Required Surveillance Performance RSP180
		RSP400	Aircraft is authorized for Required Surveillance Performance RSP400
	ADS−B	A2	Aircraft has 1090 MHz Extended Squitter ADS−B compliant with RTCA DO−260B (complies with FAA requirements)
		A2	Aircraft has 978 MHz UAT ADS−B compliant with RTCA DO−282B (complies with FAA requirements)

NOTE−

1. *Other entries in NAV/, COM/, DAT/, and SUR/ are permitted for international flights when instructed by other service providers. Direction on use of these capabilities by the FAA is detailed in the following sections.*

2. *In NAV/, descriptors for advanced capabilities (Z1, P1, R1, M1, and M2) should be entered as a single character string with no intervening spaces, and separated from any other entries in NAV/ by a space.*

EXAMPLE−

NAV/Z1P1M2 SBAS

TBL A−5

Item 18. PBN/ Specifications

Include as many of the applicable descriptors, up to a maximum of 8 entries (not more than 16 characters).

PBN/	RNAV SPECIFICATIONS
A1	RNAV 10 (RNP 10)
B1	RNAV 5 all permitted sensors
B2	RNAV 5 GNSS
B3	RNAV 5 DME/DME
B4	RNAV 5 VOR/DME
B5	RNAV 5 INS or IRS
B6	RNAV 5 LORAN C
C1	RNAV 2 all permitted sensors
C2	RNAV 2 GNSS
C3	RNAV 2 DME/DME
C4	RNAV 2 DME/DME/IRU
D1	RNAV 1 all permitted sensors
D2	RNAV 1 GNSS
D3	RNAV 1 DME/DME
D4	RNAV 1 DME/DME/IRU
PBN/	**RNP SPECIFICATIONS**
L1	RNP 4
O1	Basic RNP 1 all permitted sensors
O2	Basic RNP 1 GNSS
O3	Basic RNP 1 DME/DME
O4	Basic RNP 1 DME/DME/IRU
S1	RNP APCH
S2	RNP APCH with BARO−VNAV
T1	RNP AR APCH with RF (special authorization required)
T2	RNP AR APCH without RF (special authorization required)

NOTE−
1. *PBN Codes B1−B6 indicates RNAV 5 capability. The FAA considers these B codes to be synonymous and qualifying for point-to-point routing but not for assignment to the PBN routes shown in the table.*
2. *Combinations of alphanumeric characters not included above are reserved.*
3. *The PBN/ specifications are allowed per ICAO Doc. 4444. The FAA makes use of a subset of these codes as described in the section on filing navigation capability.*

(c) The following sections detail what capabilities need to be provided to obtain services from the FAA for:

- IFR flights (general).
- Assignment of Performance−Based Navigation (PBN) routes.
- Automated Departure clearance (via Datacom DCL or PDC).
- Reduced Vertical Separation Minima (if requesting FL 290 or above).
- Reduced Separation in Oceanic Airspace.

(d) Capabilities such as voice communications, required communications performance, approach aids, and ADS−C, are not required in a flight plan that remains entirely within domestic airspace.

(e) Flights that leave domestic United States airspace may be required to include additional capabilities, per requirements for the FIRs being overflown. Consult the appropriate State Aeronautical Information Publications for requirements.

(f) Include the capability only if:

- The requisite equipment is operational;
- The crew is trained as required; and
- Any required Operations Specification, Letter of Authorization, or other approvals are in hand.

NOTE−
Do not include a capability solely based on the installed equipment, if an operational approval is required.

5. Filing equipment and capability in an IFR Flight Plan. This section details the minimum requirements to identify capabilities in an IFR flight plan for flights in the domestic United States. Other requirements to file a capability are associated with obtaining specific services as described in subsequent sections. The basic capabilities that must be addressed include Navigation, Transponder, Voice, and ADS−B Out as described below. A designator for "Standard" capability is also allowed to cover a suite of commonly carried voice, navigation, and approach equipment with one code.

(a) Standard Capability and No Capability (Item 10a)

- Use "S" if VHF radio, VOR, and ILS equipment for the route to be flown are carried and serviceable. Use of the "S" removes the need to list these three capabilities separately.
- Use "N" if no communications, navigation, or approach aid equipment for the route to be flown are carried or the equipment is unserviceable.
- When there is no transponder, ADS−B, or ADS−C capability then file only the letter "N" in Item 10b.

(b) Navigation Capabilities (Item 10a, Item 18 NAV/)

- Indicate radio navigation capability by filing one or more of the codes in TBL A−6.
- Indicate Area Navigation (RNAV) capability by filing one or more of the codes in TBL A−7.

TBL A−6
Radio Navigation Capabilities

Capability	Item 10a	Item 18 NAV/
VOR	O	
DME	D	
TACAN	T	

TBL A−7
Area Navigation Capabilities

Capability	Item 10a	Item 18 NAV/
GNSS	G	SBAS (if WAAS equipped) GBAS (if LAAS equipped)
INS	I	
DME / DME	DR	
VOR / DME	DOR	

NOTE−
1. *SBAS − Space-Based Augmentation System*
GBAS − Ground-Based Augmentation System
2. *No PBN/ code needs to be filed to indicate the ability to fly point-to-point routes using GNSS or INS.*
3. *Filing one of these four area navigation capabilities as shown does not indicate performance based navigation sufficient for flying Q−Routes, T−Routes, or RNAV SIDs or STARs. To qualify for these routes, see the section on Performance-Based Navigation Routes.*

(c) Transponder Capabilities (Item 10b)

S For domestic flights, it is not necessary to indicate Mode S capability. It is acceptable to simply file one of the following codes in TBL A−8.

TBL A−8
Mode C

Capability	Item 10b
Transponder with no Mode C	A
Transponder with Mode C	C

- International flights must file in accordance with relevant AIPs and regional supplements. Include one of the Mode S codes in TBL A−9, if appropriate.

NOTE−
File only one transponder code.

TBL A−9
Mode S

Capability	Aircraft ID	Altitude Encoding	Item 10b
Mode S transponder	No	No	X
Mode S transponder	No	Yes	P
Mode S transponder	Yes	No	I
Mode S transponder	Yes	Yes	S
Mode S transponder with extended squitter	Yes	Yes	E
Enhanced Mode S transponder	Yes	Yes	H
Enhanced Mode S transponder with extended squitter	Yes	Yes	L

(d) ADS−B Capabilities (Item 10b, Item 18 SUR/ and Item 18 CODE/)

- Indicate ADS−B capability as shown in TBL A−10. The accompanying entry in Item 18 indicates that the equipment is compliant with 14 CFR 91.227. Some ADS−B equipment used in other countries is based on an earlier standard and does not meet U.S. requirements.
- Do not file an ADS−B code for “in” capability only. There is currently no way to indicate that an aircraft has “in” capability but no “out” capability.
- For aircraft with ADS−B “out” on one frequency and “in” on another, include only the ADS−B “out” code. For example, B1 or U1, (See TBL A−10).

TBL A−10
ADS−B Capabilities

Capability	Item 10b	Item 18 SUR/
1090 ES Out Capability	B1	A2
1090 ES Out and In Capability	B2	A2
UAT Out Capability	U1	A2
UAT Out and In Capability	U2	A2

(e) Voice Communication capabilities (Item 10a)

The FAA does not require indication of voice communication capabilities in a flight plan for domestic flights, but it is permissible. For flights outside the domestic United States, all relevant capabilities must be indicated as follows (See TBL A−11):

TBL A−11

Voice Communication Capabilities

Capability	Item 10a
VHF Radio	V
UHF Radio	U
HF Radio	H
VHF Radio (8.33 kHz Spacing)	Y
ATC SATVOICE (INMARSAT)	M1
ATC SATVOICE (Iridium)	M3

(f) Approach Aid Capabilities (Item 10a)

The FAA does not require filing of approach aid capability in order to request a specific type of approach, however any of the codes indicated in TBL A−12 in 10a are permissible.

- International flights may be required to indicate approach capability, based on instructions from relevant service providers.

TBL A−12

Approach Aid Capabilities

Capability	Item 10a
ILS	L
MLS	K
LPV Approach (APV with SBAS) (WAAS)	B
GBAS Landing System (LAAS)	A

6. Performance-Based Navigation Routes (Item 10a, Item 18 PBN/, Item 18 NAV/)− When planning to fly routes that require PBN capability, file the appropriate capability as shown in TBL A−13.

TBL A−13

Filing for Performance Based Navigation (PBN) Routes

Type of Routing	Capability Required	Item 10a	Item 18 PBN/ See Note 2	Item 18 NAV/ See Note 3	Notes
RNAV SID or STAR (See Note 1)	RNAV 1	GR	D2		If GNSS
		DIR	D4		If DME/DME/ IRU
RNP SID or STAR (See Note 2)	RNP 1 GNSS	GR	O2		If GNSS only
	RNP 1 GNSS	DGIR	O1		If GNSS primary and DME/DME/ IRU backup
RNP SID or STAR with RF required (See Note 2)	RNP 1 GNSS	GRZ	O2	Z1	If GNSS only
	RNP 1 GNSS	DGIRZ	O1	Z1	If GNSS primary and DME/DME/ IRU backup
Domestic Q−Route (see separate requirements for Gulf of Mexico Q−Routes)	RNAV 2	GR	C2		If GNSS
		DIR	C4		If DME/DME/ IRU
T−Route	RNAV 2	GR	C2		GNSS is required for T-Routes
RNAV (GPS) Approach	RNP Approach, GPS	GR	S1		*Domestic arrivals do not need to file PBN approach capabilities to request the approach.*
RNAV (GPS) Approach	RNP Approach, GPS Baro−VNAV	GR	S2		
RNAV (GPS) Approach with RF required	RNP Approach, GPS RF Capability	GRZ	S2	Z1	
RNP AR Approach with RF	RNP (Special Authorization Required) RF Leg Capability	GR	T1		
RNP AR approach without RF	RNP (Special Authorization Required)	GR	T2		

NOTE−

1. *If the flight is requesting an RNAV SID only (no RNAV STAR) or RNAV STAR only (no RNAV SID) then consult guidance on the FAA website at https://www.faa.gov/about/office_or g/headquarters_offices/ato/service_units/air_traffic_services/flight_plan_filing .*

2. *PBN descriptor D1 includes the capabilities of D2, D3, and D4. PBN descriptor B1 includes the capabilities of B2, B3, B4, and B5. PBN descriptor C1 includes the capabilities of C2, C3, and C4.*

3. *In NAV/, descriptors for advanced capabilities (Z1, P1, R1, M1, and M2) should be entered as a single character string with no intervening spaces, and separated from any other entries in NAV/ by a space.*

EXAMPLE−

NAV/Z1P1M2 SBAS

7. Automated Departure Clearance Delivery (DCL or PDC). When planning to use automated pre-departure clearance delivery capability, file as indicated below.

(a) PDC provides pre-departure clearances from the FAA to the operator's designated flight operations center, which then delivers the clearance to the pilot by various means. Use of PDC does not require any special flight plan entry.

(b) DCL provides pre-departure clearances from the FAA directly to the cockpit/FMS via Controller Pilot Datalink Communications (CPDLC). Use of DCL requires flight plan entries as follows:

- Include CPDLC codes in Item 10a only if the flight is capable of en route/oceanic CPDLC, the codes are not required for DCL.
- Include Z in Item 10a to indicate there is information provided in Item 18 DAT/.
- Include the clearance delivery methods of which the flight is capable, and order of preference in Item 18 DAT/. (See AIM 5−2−2)
    - VOICE − deliver clearance via Voice
    - PDC − deliver clearance via PDC
    - FANS − deliver clearance via FANS 1/A
    - FANSP − deliver clearance via FANS 1/A+

EXAMPLE−
DAT/1FANS2PDC
DAT/1FANSP2VOICE

8. Operating in Reduced Vertical Separation Minima (RVSM) Airspace (Item 10a). When planning to fly in RVSM airspace (FL 290 up to and including FL 410) then file as indicated below.

(a) If capable and approved for RVSM operations, per AIM 4−6−1, Applicability and RVSM Mandate (Date/Time and Area), file a W in Item 10a. Include the aircraft registration mark in Item 18 REG/, which is used to post-operationally monitor the safety of RVSM operations.

- Do not file a "W" in Item 10a if the aircraft is capable of RVSM operations, but is not approved to operate in RVSM airspace.
- If RVSM capability is lost after the flight plan is filed, request that ATC remove the "W" from Item 10a.

(b) When requesting to operate non-RVSM in RVSM airspace, using one of the exceptions identified in AIM 4−6−10, do not include a "W" in Item 10a. Include STS/NONRVSM in Item 18. STS/NONRVSM is used only as part of a request to operate non-RVSM in RVSM airspace.

9. Eligibility for Reduced Oceanic Separation. Indicate eligibility for the listed reduced separation minima as indicated in the tables below. Full Operational Requirements for these services are found in the U.S. Aeronautical Information Publication (AIP) ENR 7, Oceanic Operations, available at http://www.faa.gov/air_traffic/publications/atpubs/aip_html/index.html.

TBL A−14
Filing for Gulf of Mexico CTA

Dimension of Separation	Separation Minima	ADS−C Surveillance Requirements	Comm. Requirement	PBN Requirement	Flight Plan Entries			
					ADS−C in Item 10b	CPDLC in Item 10a	PBN in Item 18 PBN/ (also file "R" in Item 10a)	PBN in Item 18 NAV/
Lateral	50 NM	N/A (ADS−C not required)	Voice comm− HF or VHF as required to maintain contact over the entire route to be flown.	RNP10 or RNP4	N/A	N/A	A1 or L1	N/A

NOTE−
If not RNAV10/RNP10 capable and planning to operate in the Gulf of Mexico CTA, then put the notation NONRNP10 in Item 18 RMK/, preferably first.

TBL A−15

Filing for 50 NM Lateral Separation in Anchorage Arctic FIR

Dimension of Separation	Separation Minima	ADS−C Surveillance Requirements	Comm. Requirement	PBN Requirement	Flight Plan Entries			
					ADS−C in Item 10b	CPDLC in Item 10a	PBN in Item 18 PBN/ (also File “R” in Item 10a)	PBN in Item 18 NAV/
Lateral	50 NM	N/A (ADS−C not required)	None beyond normal requirements for the airspace	RNP10 or RNP4	N/A	N/A	A1 or L1	N/A

TBL A−16

Filing for 30 NM Lateral, 30 NM Longitudinal, and 50 NM Longitudinal Oceanic Separation in Anchorage, Oakland, and New York Oceanic CTAs

Dimension of Separation	Separation Minima	ADS−C Surveillance Requirements	Comm. Requirement	PBN Requirement	Flight Plan Entries			
					ADS−C in Item 10b	CPDLC in Item 10a	PBN in Item 18 PBN/ (also file “R” in Item 10a)	PBN in Item 18 NAV/
Longitudinal	50 NM	Position report at least every 27 minutes (at least every 32 minutes if both aircraft are approved for RNP−4 operations)	CPDLC	RNP10	D1	J5, and/or J6, and/or J7	A1	N/A
Longitudinal	30 NM	ADS−C position report at least every 10 minutes	CPDLC	RNP4	D1	J5, and/or J6, and/or J7	L1	N/A
Lateral	30 NM	ADS−C-based lateral deviation event contract with 5NM lateral deviation from planned routing set as threshold for triggering ADS report of lateral deviation event	CPDLC	RNP4	D1	J5, and/or J6, and/or J7	L1	N/A

TBL A−17

Filing for Reduced Oceanic Separation when RSP/RCP Required on March 29, 2018

Dimension of Separation	Separation Minima	RSP Requirement	RCP Requirement	PBN Requirement	Flight Plan Entries				
					RSP in Item 18 SUR/	RCP in Item 10a	CDPLC in Item10a	PBN in Item 18 PBN/ (also file “R” in Item 10a)	PBN in Item 18 NAV/
Lateral	55.5 km 30 NM	180	240	RNP 2 or RNP4	RSP180	P2	J5, and/or J6, and/or J7	L1	
Performance-based Longitudinal	5 Minutes	180	240	RNAV10 (RNP10) RNP4, or RNP2 oceanic/remote	RSP180	P2	J5, and/or J6, and/or J7	A1 or L1	M2
Performance-based Longitudinal	55.5 km 30 NM	180	240	RNP4 or RNP2 oceanic/remote	RSP180	P2	J5, and/or J6, and/or J7	L1	M2
Performance-based Longitudinal	93 km 50 NM	180	240	RNAV10 (RNP10) or RNP4	RSP180	P2	J5, and/or J6, and/or J7	A1 or L1	

NOTE−
1. *Filing of RNP 2 alone is not supported in FAA controlled airspace; PBN/L1 (for RNP 4) or PBN/A1 (for RNP 10) must be filed to obtain the indicated separation.*

2. *Use of "RNP2" in NAV/ signifies continental RNP 2 (and means the same as M1). Continental RNP 2 is not adequate for reduced oceanic separation. Descriptor M2 indicates RNP 2 global/oceanic RNP 2 capability.*

10. Date of Flight (Item 18 DOF/)

Flights planned 22½ hours or more after the time the flight plan is filed, must include the date of flight in DOF/ expressed in a six-digit format YYMMDD, where YY equals the year (Y), MM equals the month, and DD equals the day.

NOTE−
FAA ATC systems will not accept flight plans 22½ hours or more prior to the proposed departure time. FAA Flight Service and commercial flight planning services generally accept flight plans earlier and forward to ATC at an appropriate time, typically 2 to 4 hours before the flight.

EXAMPLE−
DOF/171130

11. Reasons for special handling (Item 18 STS/).

(a) Indicate the applicable Special Handling in Item 18 STS/ as shown in TBL A−18.

NOTE−
Priority for a flight is not automatically granted based on filing one of these codes but is based on documented procedures. In some cases, additional information may also be required in remarks; follow all such instructions as well.

TBL A−18
Special Handling

Special Handling	Item 18 STS/
Flight operating in accordance with an altitude reservation	ALTRV
Flight approved for exemption from ATFM measures by the appropriate ATS authority	ATFMX
Fire Fighting	FFR
Flight check for calibration of NAVAIDS	FLTCK
Flight carrying hazardous material(s)	HAZMAT
Flight with Head of State status	HEAD
Medical flight declared by medical authorities	HOSP
Flight operating on a humanitarian mission	HUM
Flight for which a military entity assumes responsibility for separation of military aircraft	MARSA
Life critical medical emergency evacuation	MEDEVAC
Non-RVSM capable flight intending to operate in RVSM airspace	NONRVSM
Flight engaged in a search and rescue mission	SAR
Flight engaged in military, customs, or police services	STATE

(b) Any other requests for special handling must be made in Item 18 RMK/.

(c) Include plain-language remarks when required by ATC or deemed necessary. Do not use special characters; for example, / * − = +.

EXAMPLE−
RMK/NRP
RMK/DVRSN

12. Remarks

Include when necessary.

13. Operator (Item 18 OPR/)

When the operator is not obvious from the aircraft identification, the operator may be indicated.

EXAMPLE–
OPR/NETJETS

14. Flight Plan Originator (Item 18 ORGN/)

(a) VFR flight plans originating outside of FAA FSS or FAA contracted flight plan filing services must enter the 8-letter AFTN address of the service where the flight plan was originally filed. Alternately, enter the name of the service where the FPL was originally filed. This information is critical to locating the FPL originator in the event additional information is needed.

(b) For IFR flight plans, the original filers AFTN address may be indicated, which is helpful in cases where a flight plan has been forwarded.

EXAMPLE–
ORGN/Acme Flight Plans
ORGN/KDENXLDS

TBL A–19
Aircraft Specific Information

Item	International Flight Plan (FAA Form 7233–4)	Domestic U.S. Requirements	Equivalent Item on Domestic Flight Plan (FAA Form 7233–1)
Number of Aircraft	Item 9	Included when more than one a/c in flight	Item 3
Type of Aircraft	Item 9	Required	Item 3
Wake Turbulence Category	Item 9	Required	N/A
Aircraft Registration	Item 18 REG/	Include when planning to operate in RVSM airspace	N/A
Mode S Address	Item 18 CODE/	Not required within U.S. controlled airspace	N/A
SELCAL Codes	Item 18 SEL/	Include when SELCAL equipped	N/A
Performance Category	Item 18 PER/	Not required for domestic flights	N/A

e. Instructions for Aircraft-Specific Information.

1. Number of Aircraft (Item 9) when there is more than one aircraft in the flight; indicate the number of aircraft up to 99.

2. Type of Aircraft (Item 9)

(a) Provide the appropriate 2–4-character aircraft type designator listed in FAA Order JO 7360.1, Aircraft Type Designators, at:
https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.information/documentID/1036757

(b) When there is no designator for the aircraft type use 'ZZZZ', and provide a description in Item 18 TYP/.

3. Wake turbulence category (Item 9)

A Wake Turbulence Category is required for all aircraft types. Provide the appropriate wake turbulence category for the aircraft type as listed in FAA Order JO 7360.1. The categories include:

(a) J – SUPER, aircraft types specified as such in FAA Order JO 7360.1, Aircraft Type Designators.

(b) H – HEAVY, to indicate an aircraft type with a maximum certificated take-off mass of 300,000 lbs. or more, with the exception of aircraft types listed in FAA Order JO 7360.1 in the SUPER (J) category.

(c) M – MEDIUM, to indicate an aircraft type with a maximum certificated take-off mass of less than 300,000 lbs. but more than 15,500 lbs.

(d) L – LIGHT, to indicate an aircraft type with a maximum certificated take-off mass of 15,500 lbs. or less.

4. Aircraft Registration (Item 18 REG/)

The aircraft registration must be provided here if different from the Item 7 entry. The registration mark must not include any spaces or hyphens. Additionally, the actual aircraft registration must also be included if Item 7 would have contained a leading numeric and was modified to be prefixed with the appropriate alphabetic character for U.S. ATC acceptance.

EXAMPLE−
U.S. aircraft with registration N789AK
REG/N789AK
Belgian aircraft with registration OO−FAH
REG/OOFAH

5. Mode S Address (Item 18 CODE/)

There is no U.S. requirement to file the aircraft Mode S code in Item 18.

6. SELCAL code (Item 18 SEL/)

(a) Flights with HF radio and Selective Calling capability should include their 4-letter SELCAL code. Per the U.S. AIP, GEN 3.4, paragraph 9, Selective Calling System (SELCAL) Facilities Available.

(b) The SELCAL is a communication system that permits the selective calling of individual aircraft over radio-telephone channels from the ground station to properly equipped aircraft, to eliminate the need for the flight crew to constantly monitor the frequency in use.

EXAMPLE−
SEL/CLEF

7. Performance Category (Item 18 PER/)

Include the appropriate single-letter aircraft approach category as defined in the Pilot/Controller Glossary.

EXAMPLE−
PER/A

TBL A−20
Flight Routing Information

Item	International Flight Plan (FAA Form 7233−4)	Domestic U.S. Requirements	Equivalent Item on Domestic Flight Plan (FAA Form 7233−1)
Departure Airport	Item 13	Required	Item 2
Departure Time	Item 13	Required	Item 1
Cruise Speed	Item 15	Required	N/A
Requested Altitude	Item 15	Required	Item 3
Route	Item 15	Required	N/A
Delay En Route	Item 15, Item 18 DLE/	Required	N/A
Destination Airport	Item 16	Required	Item 11
Total Estimated Elapsed Time	Item 16	Required	Item
Alternate Airport	Item 16 Item 18 ALTN/ (Destination Alternate) RALT/ (En Route Alternate); TALT/ (Take-off Alternate)	If necessary No need to file for domestic U.S. flight	N/A
Estimated Elapsed Times	Item 18 EET/	Include when filing flight plan with center other than departure center	N/A

f. Instructions for Flight Routing Items

1. Departure Airport (Item 13, Item 18 DEP/)

(a) Enter the departure airport. The airport should be identified using the four-letter location identifier from FAA Order JO 7350.9, Location Identifiers, or from ICAO Document 7910. FSS and FAA contracted flight plan filing services will allow up to 11 characters in the departure field. This will permit entry of non-ICAO identifier airports, and other fixes such as an intersection, fix/radial/distance, and latitude/longitude coordinates. Other electronic filing services may require a different format.

NOTE−
While user interfaces for flight plan filing are not specified, all flight plan filing services must adhere to the appropriate Interface Control Document upon transmission of the flight plan to the control facility.

(b) When the intended departure airport (Item 13) is outside of domestic U.S. airspace, or if using the paper version of FAA Form 7233−4, or DoD equivalent, if the chosen flight plan filing service does not allow non-ICAO airport identifiers in Item 13 or Item 16, use the following ICAO procedure. Enter four Zs (ZZZZ) in Item 13 and include the non−ICAO airport location identifier, fix, or waypoint location in Item 18 DEP/. A text description following the location identifier is permissible in Item 18 DEP/.

NOTE−
Use of non-ICAO identifiers in Item 13 and Item 16 is only permissible when flight destination is within U.S. airspace. If the destination is outside of the U.S., then both Item 13 and Item 16 must contain either a valid ICAO airport identifier or ZZZZ. Use of non-ICAO departure point is not permitted in Item 13 if destination in Item 16 is outside of U.S.

EXAMPLE−
DEP/MD21
DEP/W29 BAY BRIDGE AIRPORT
DEP/EMI211017
DEP/3925N07722W

2. Departure Time (Item 13)

Indicate the expected departure time using 4 digits, 2 digits for hours and 2 digits for minutes. Time is to be entered as Coordinated Universal Time (UTC).

3. Requested Cruising Speed (Item 15)

(a) Include the requested cruising speed as True Airspeed in knots using an N followed by four digits.

EXAMPLE−
N0450

(b) Indicate the requested cruising speed in Mach using an M followed by three digits.

EXAMPLE−
M081

4. Requested Cruising Altitude or Flight Level (Item 15)

(a) Indicate a Requested Flight Level using the letter F followed by 3 digits.

EXAMPLE−
F350

(b) Indicate a Requested Altitude in hundreds of feet using the letter A followed by 3 digits.

EXAMPLE−
A080

5. Route (Item 15)

Provide the requested route of flight using a combination of published routes, latitude/longitude, and/or fixes in the following formats.

(a) Consecutive fixes, lat/long points, NAVAIDs, and waypoints should be separated by the characters "DCT", meaning direct.

EXAMPLE−
FLACK DCT IRW DCT IRW12503
4020N07205W DCT MONEY

(b) A published route should be preceded by a fix that is published on the route, indicating where the route will be joined. The published route should be followed by a fix that is published as part of the route, indicating where the route will be exited.

EXAMPLE−
DALL3 EIC V18 MEI LGC4

(c) It is acceptable to specify intended speed and altitude changes along the route by appending an oblique stroke followed by the next speed and altitude. However, note that FAA ATC systems will neither process this information nor display it to ATC personnel. Pilots are expected to maintain the last assigned altitude and request revised altitude clearances from ATC.

EXAMPLE−
DCT APN J177 LEXOR/N0467F380 J177 TAM/N0464F390 J177

NOTE−
Further guidance on route construction can be found at http://www.faa.gov/ato?k=fpl.

6. Delay En Route (Item 15, Item 18 DLE/)

(a) ICAO defines Item 18 DLE/ to provide information about a delay en route. International flights with a delay outside U.S. domestic airspace should indicate the place and duration of the delay in Item 18 DLE/. The delay is expressed by a fix identifier followed by the duration in hours (H) and minutes (M), HHMM.

EXAMPLE−
DLE/EMI0140

(b) U.S. ATC systems will accept but not process information in DLE/. Therefore, for flights in the lower 48 states, it is preferable to include the delay as part of the route (Item 15). Delay in this format is specified by an oblique stroke (/) followed by the letter D, followed by 2 digits for hours (H) of delay, followed by a plus sign (+), followed by 2 digits for minutes (M) of delay: /DHH+MM.

EXAMPLE−
DCT EMI/D01+40 DCT MAPEL/D00+30 V143 DELRO DCT

7. Destination Airport (Item 16, Item 18 DEST/)

(a) Enter the destination airport. The airport should be identified using the four-letter location identifier from FAA Order JO 7350.9, Location Identifiers, or from ICAO Document 7910. FSS and FAA contracted flight plan filing services will allow up to 11 characters in the destination field. This will permit entry of non-ICAO identifier airports, and other fixes such as an intersection, fix/radial/distance, and latitude/longitude coordinates. Other electronic filing services may require a different format.

NOTE−
While user interfaces for flight plan filing are not specified, all flight plan filing services must adhere to the appropriate Interface Control Document upon transmission of the flight plan to the control facility.

(b) When the intended destination (Item 16) is outside of domestic US airspace, or if using the paper version of FAA Form 7233−4, or if the chosen flight plan filing service does not allow non-ICAO airport identifiers in Item 13 or Item 16, use the following ICAO procedure. Enter four Zs (ZZZZ) in Item 13 and include the non-ICAO airport location identifier, fix, or waypoint location in Item 18 DEP/. A text description following the location identifier is permissible in Item 18 DEP/.

EXAMPLE−
DEST/06A MOTON FIELD
DEST/4AK6
DEST/MONTK
DEST /3925N07722W

8. Total Estimated Elapsed Time (Item 16)

All flight plans must include the total estimated elapsed time from departure to destination in hours (H) and minutes (M), format HHMM.

9. Alternate Airport (Item 16, Item 18 ALTN/)

(a) When necessary, specify an alternate airport in Item 16 using the four-letter location identifier from FAA Order JO 7350.9 or ICAO Document 7910. When the airport does not have a four-letter location identifier, include ZZZZ in Item 16c and file the non-standard identifier in Item 18 ALTN/.

(b) While the FAA does not require filing of alternate airports in the flight plan provided to ATC, rules for establishing alternate airports must be followed.

(c) Adding an alternate may assist during Search and Rescue by identifying additional areas to search.

(d) Although alternate airport information filed in a flight plan will be accepted by air traffic computer systems, it will not be presented to controllers. If diversion to an alternate airport becomes necessary, pilots are expected to notify ATC and request an amended clearance.

EXAMPLE−
ALTN/W50 2W2

10. Estimated Elapsed Times (EET) at boundaries or reporting points (Item 18 EET/)

EETs are required for international or oceanic flights when crossing a Flight Information Region (FIR) boundary. The EET will include the ICAO four-letter location identifier for the FIR followed by the elapsed time to the FIR boundary (e.g., KZNY0245 indicates 2 hours, 45 minutes from departure until the New York FIR boundary).

EXAMPLE−
EET/MMFR0011 MMTY0039 KZAB0105

11. Remarks (Item 18 RMK/)

Enter only those remarks pertinent to ATC or to the clarification of other flight plan information. Items of a personal nature are not accepted.

NOTE−
1. *"DVRSN" should be placed in Item 11 only if the pilot/company is requesting priority handling to their original destination from ATC as a result of a diversion as defined in the Pilot/Controller Glossary.*
2. *Do not assume that remarks will be automatically transmitted to every controller. Specific ATC or en route requests should be made directly to the appropriate controller.*

g. Flight Specific Supplemental Information (Item 19)

1. Item 19 data must be included when completing FAA Form 7233−4. This information will be retained by the facility/organization that transmits the flight plan to Air Traffic Control (ATC), for Search and Rescue (SAR) purposes, but it will not be transmitted to ATC as part of the flight plan.

2. Do not include Supplemental Information as part of Item 18. The information in Item 19 is retained with the flight plan filing service for retrieval only if necessary.

NOTE−
Supplemental Information within Item 19 will be transmitted as a separate message to the destination FSS for VFR flight plans filed with a FSS or FAA contracted flight plan filing service. This will reduce the time necessary to conduct SAR actions should the flight become overdue, as this information will be readily available to the destination Flight Service Station.

3. Minimum required Item 19 entries for a domestic flight are Endurance, Persons on Board, Pilot Name and Contact Information, and Color of Aircraft. Additional entries may be required by foreign air traffic services, or at pilot discretion.

(a) After E/ Enter fuel endurance time in hours and minutes.

(b) After P/ Enter total number of persons on board using up to 30 alphanumeric characters. Enter TBN (to be notified) if the total number of persons is not known at the time of filing.

EXAMPLE−
P/005
P/TBN
P/ON FILE CAPEAIR OPERATIONS

(c) R/ (Radio) Cross out items not carried

(d) S/ (Survival Equipment). Cross out items not carried.

(e) J/ (Jackets) Cross out items not carried.

(f) D/ (Life Raft/Dinghies) Enter number carried and total capacity. Indicate if covered and color.

(g) A/ (Aircraft Color and Markings) Enter aircraft color(s).

EXAMPLE−
White Yellow Blue

4. N/ (Remarks. Not for ATC) select N if no remarks. Enter comments concerning survival equipment and information concerning personal GPS locating service, if utilized. Enter name and contact information for responsible party to verify VFR arrival/closure, if desired. Ensure party will be available for contact at ETA (for example; FBO is open at ETA).

5. C/ (Pilot) Enter name and contact information, including telephone number, of pilot-in-command. Ensure contact information will be valid at ETA in case SAR is necessary.

FIG A−1

FAA Form 7233−4, Pre-Flight Pilot Checklist and International Flight Plan

PRIVACY ACT STATEMENT: This statement is provided pursuant to the Privacy Act of 1974, 5 USC § 552a: The authority for collecting this information is contained in 49 U.S.C. §§ 40113, 44702, 44703, 44709, and 14 C.F.R. Part 6 - [Part 61, 63, 65, or 67. The principal purpose for which the information is intended to be used is to allow you to submit your flight plan. Submission of the data is voluntary. Failure to provide all required information may result in you not being able to submit your flight plan. The information collected on this form will be included in a Privacy Act System of Records known as DOT/FAA 847, titled "Aviation Records on Individuals" and will be subject to the routine uses published in the System of Records Notice (SORN) for DOT/FAA 847 (see www.dot.gov/privacy/privacyactnotices).

Paperwork Reduction Act Statement: A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB Control Number. The OMB Control Number for this information collection is 2120-0026. Public reporting for this collection of information is estimated to be approximately 2.5 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, completing and reviewing the collection of information. All responses to this collection of information are required to obtain or retain a benefit per 14 CFR Part 91. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to the FAA at: 800 Independence Ave. SW, Washington, DC 20591, Attn: Information Collection Clearance Officer, ASP-110.

Pre-Flight Pilot Checklist

Aircraft Identification | Time of Briefing

		Remarks	Report Weather Conditions Aloft			
			Report immediately weather conditions encountered---particularly cloud tops, upper cloud layers, thunderstorms, ice, turbulence, winds and temperature			
			Position	Altitude	Time	Weather Conditions
Weather (Destination) (Alternate)	☐ Present					
	☐ Forecast					
Weather (En Route)	☐ Present					
	☐ Forecast					
	☐ Pireps					
Winds Aloft	Best Crzg. Alt.					
Nav. Aid & Comm. Status.	☐ Destination					
	☐ En Route					
Airport Conditions	☐ Destination					
	☐ Alternate					
ADIZ	☐ Airspace Restrictions					

Civil Aircraft Pilots

FAR Part 91 states that each person operating a civil aircraft of U S. registry over the high seas shall comply with Annex 2 to the Convention of International Civil Aviation, International Standards - Rules of the Air. Annex 2 requires the submission of a flight plan containing items 1-1 9 prior to operating any flight across international waters. Failure to file could result in a civil penalty not to exceed $1,000 for each violation (Section 901 of the Federal Aviation Act of 1958, as amended).

International briefing information may not be current or complete. Data should be secured, at the first opportunity, from the country in whose airspace the flight will be conducted.

U S Department of Transportation
Federal Aviation Administration

International Flight Plan

PRIORITY
<=FF

ADDRESSEE(S)

<=

FILING TIME

ORIGINATOR

<=

SPECIFIC IDENTIFICATION OF ADDRESSEE(S) AND / OR ORIGINATOR

3 MESSAGE TYPE
<=(FPL

7 AIRCRAFT IDENTIFICATION
—

8 FLIGHT RULES
—

TYPE OF FLIGHT
—
<=

9 NUMBER
—

TYPE OF AIRCRAFT

WAKE TURBULENCE CAT.
/

10 EQUIPMENT
— /
<=

13 DEPARTURE AERODROME
—

TIME
<=

15 CRUISING SPEED
—

LEVEL

ROUTE

<=

16 DESTINATION AERODROME

TOTAL EET
HR MIN

ALTN AERODROME

2ND ALTN AERODROME
<=

18 OTHER INFORMATION
—

<=

SUPPLEMENTARY INFORMATION (NOT TO BE TRANSMITTED IN FPL MESSAGES)

19 ENDURANCE
HR MIN
—E/

PERSONS ON BOARD
P/

EMERGENCY RADIO
UHF VHF ELT
R/ U V E

SURVIVAL EQUIPMENT
POLAR DESERT MARITIME JUNGLE
/ P D M J

JACKETS
LIGHT FLUORES UHF VHF
/ L F U V

DINGHIES
NUMBER CAPACITY COVER
D / C

COLOR
<=

AIRCRAFT COLOR AND MARKINGS
A/

REMARKS
N /
<=

PILOT-IN-COMMAND
C/
)<=

FILED BY

ACCEPTED BY

ADDITIONAL INFORMATION

NOTE–
Current FAA Form 7233−4 available at https://www.faa.gov/forms/.

Appendix B. FAA Form 7233−1, Flight Plan

Section 1. General

1. Where references are made to FAA Form 7233−1, Flight Plan, and FAA Form 7233−4, International Flight Plan, Department of Defense (DoD) use of the equivalent DoD Forms 175 and 1801 respectively, is implied and acceptable.

2. Within U.S. controlled airspace, FAA Form 7233−1, Flight Plan, may be used by filers of DoD/military flight plans and civilian stereo route flight plans.

3. Use of the international flight plan format is mandatory for:

a. Any flight plan filed, with the exception of DoD flight plans and civilian stereo route flight plans, which can still be filed using the format prescribed in FAA Form 7233−1.

b. Any flight that will depart U.S. domestic airspace. For DoD flight plan purposes, offshore warning areas may use FAA Form 7233−1 or military equivalent.

c. Any flight requesting routing that requires Performance Based Navigation.

d. Any flight requesting services that require filing of capabilities only supported in the international flight plan.

NOTE−
1. *DoD Form DD−175 and FAA Form 7233−1 are considered to follow the same format and the order of the elements correspond to each other.*

2. *For the international flight plan format, see Appendix A.*

Section 2. Instructions for Flight Plan Items

1. Type of flight plan (**Item 1**). Check the appropriate box:

a. VFR for visual flight rules.

b. IFR for instrument flight rules.

c. DVFR for defense VFR.

2. Aircraft identification, call sign. (**Item 2**).

a. Enter two−to−seven alphanumeric characters followed by a space character. The first character of the identification must be a letter. For flight processing systems (for example, ERAM or STARS) which do not accept a call sign that begins with a number:

(1) If the call sign is six characters or less, add a "**Q**" at the beginning of the call sign.

(2) If the call sign is seven characters, delete the first character and replace it with a "**Q**." Put the original call sign in the remarks section of the flight plan.

EXAMPLE−
9HRA becomes Q9HRA
5744233 becomes Q744233

b. Civilian aircraft including air carrier.

(1) For air taxi aircraft, enter the letter/digit registration including the letter "**T**" prefix.

(2) For MEDEVAC aircraft, enter the letter "**L**" at the beginning of the call sign. The letter "**L**" must not be entered in Item 2 of the flight plan for air carrier or air taxi MEDEVAC aircraft. Include the word "**MEDEVAC**" in the remarks section of the flight plan.

(3) For air carriers, enter the three-letter aircraft company designator specified in FAA Order JO 7340.2, Contractions, followed by the trip or flight number.

EXAMPLE−
N12345
TN5552Q
LN751B
AAL192

c. U.S. military aircraft.

(1) Enter the military abbreviation followed by the last five digits of the aircraft's number. TBL B−1 provides a list of aircraft abbreviations based on military service.

TBL B−1
Military Aircraft Abbreviations

Abbreviation	Military Service
A	U.S. Air Force
C	Coast Guard
E	Air Evacuation
G	Air/Army National Guard
CMB	CAMBER (U.S. Air Force contract)
R	Army
RCH	REACH (U.S. Air Force Air Mobility Command)
S	Special Air Mission (SAM)
VM	Marine Corps
VV	Navy

(2) For certain tactical mission aircraft, enter the assigned three−to−six letter code word followed by a one−to−four digit number. Aircraft carrying the president, vice president, and/or their family members will use the identifiers in TBL B−2.

TBL B−2

President, Vice President, and Family Call Sign Abbreviations

Service	President Code	Family Code	Vice President Code	Family Code
Air Force	AF1	EXEC1F	AF2	EXEC2F
Marine	VM1	EXEC1F	VM2	EXEC2F
Navy	VV1	EXEC1F	VV2	EXEC2F
Army	RR1	EXEC1F	RR2	EXEC2F
Coast Guard	C1	EXEC1F	C2	EXEC2F
Guard	G1	EXEC1F	G2	EXEC2F
Commercial	EXEC1	EXEC1F	EXEC2	EXEC2F

d. Canadian military aircraft. The abbreviations must be followed by a number group not to exceed four digits. TBL B−3 provides a list of Canadian aircraft abbreviations based on military service.

TBL B−3

Canadian Military Aircraft Abbreviations

Abbreviation	Military Service
CFC	Canadian Forces
CTG	Canadian Coast Guard

3. Aircraft type (**Item 3**).

a. Enter the standard aircraft type designator, in accordance with FAA Order JO 7360.1, Aircraft Type Designators.

b. Prefix to aircraft type (one−to−two alphanumeric characters).

(1) For IFR operations, if the aircraft's weight class is heavy, indicate this with the prefix "H."

(2) If a formation flight is planned, enter the number and type of aircraft (for example, 2H/B52).

c. Suffix to aircraft type (one alpha character). Indicate for IFR operations the aircraft's radar transponder, distance measuring equipment (DME), or area navigation (RNAV), including long range navigation (LORAN), capability by adding the appropriate symbol preceded by a slant (/). TBL B−4 shows the aircraft suffix codes based on navigation and transponder capabilities.

TBL B−4

Aircraft Equipment Suffixes

	Navigation Capability	Transponder Capability	Suffix
RVSM	No GNSS, No RNAV	Transponder with Mode C	/W
	RNAV, No GNSS	Transponder with Mode C	/Z
	GNSS	Transponder with Mode C	/L
No RVSM	No DME	No transponder	/X
		Transponder with no Mode C	/T
		Transponder with Mode C	/U
	DME	No transponder	/D
		Transponder with no Mode C	/B
		Transponder with Mode C	/A
	TACAN	No transponder	/M
		Transponder with no Mode C	/N
		Transponder with Mode C	/P
	RNAV, No GNSS	No transponder	/Y
		Transponder with no Mode C	/C
		Transponder with Mode C	/I
	GNSS	No transponder	/V
		Transponder with no Mode C	/S
		Transponder with Mode C	/G

NOTE−
The /E and /F suffixes will only be used by aircraft operating to and from airports within the U.S., unless authorized by the controlling authority.

REFERENCE−
FAA Order JO 7110.65, Para 2−3−8 and TBL 2−3−10, Aircraft Equipment Suffixes.

4. True airspeed (**Item 4**).

a. Enter two−to−four digits for true airspeed in knots.

b. Enter "**M**" followed by three digits for Mach number.

c. Enter "**SC**" for speed classified.

5. Departure point (**Item 5**). Enter two−to−twelve alphanumeric and slant characters for name or identifier of the departure airport or point over which the flight plan is activated.

6. Departure time (**Item 6**). Enter departure time in coordinated universal time (UTC).

7. Cruising altitude (**Item 7**).

a. Enter two−to−seven characters followed by a space character.

b. Altitudes or flight levels, as appropriate, must be expressed in hundreds of feet.

c. The letters "**OTP**" must be entered in this field to indicate a requested altitude of VFR conditions-on-top.

EXAMPLE−
"80"
"080"
"OTP"
"OTP/125"

8. Route of flight (**Item 8**).

a. Enter identifiers for airways or jet routes to indicate the proposed flight path.

b. For direct flight, use names or identifiers of navigation aids, Navigation Reference System (NRS) waypoints, and geographical points or coordinates.

c. If more than one airway or jet route is to be flown, clearly indicate the transition points.

NOTE−
1. *On some direct flights beyond the departure ARTCC's airspace, it may be necessary to include a fix in the adjacent ARTCC's airspace or latitude/longitude coordinates, as appropriate, to facilitate computer acceptance. Local procedures should be applied to these special situations.*

2. *NRS waypoints consist of five alphanumeric characters, which include the ICAO Flight Information Region (FIR) identifier, followed by the letter corresponding to the FIR subset (ARTCC area for the CONUS), the latitude increment in single digit or group form, and the longitude increment.*

EXAMPLE−
"KD34U"

9. Destination (**Item 9**). Enter two−to−twelve alphanumeric and/or slant characters for name or identifier of the destination airport or point over which the flight plan is to be canceled.

10. Estimated time en route **(Item 10**). Enter in hours and minutes the total elapsed time between departure and destination in four-digit format.

EXAMPLE−
"0215"

11. Remarks (**Item 11**).

a. Enter information necessary for ATC, search and rescue operations, and any other data pertinent to the flight or provided by the pilot.

b. For the remarks field only, use 1−80 characters beginning with *, #, $, or %. TBL B−5 provides a description for each special character.

TBL B−5
Remark Codes

Special Character	Description
*	Transmit remarks to all ARTCCs.
#	Transmit remarks to departure ARTCC only.
$	Transmit remarks only to those addresses in the CP field of the flight notification message.
%	For remarks not to be transmitted.

12. Fuel on board **(Item 12**). Enter in hours and minutes in four-digit format.

EXAMPLE−
"0330"

13. Alternate airport(s) (**Item 13**). Enter the location identifier if specified by the pilot.

14. Pilot's name, telephone number, and aircraft's home base (**Item 14**). The pilot's name is not required if BASEOPS or the aircraft operator's name and contact data are provided.

15. Number of people on board (**Item 15**). Enter the number of people on board the aircraft.

16. Color of the aircraft (**Item 16**). Use authorized contractions when available. TBL B−6 provides authorized contractions for aircraft colors.

TBL B−6

Codes for Aircraft Colors

Code	Color
A	Amber
B	Blue
BE	Beige
BK	Black
BR	Brown
G	Green
GD	Gold
GY	Gray
M	Maroon
O	Orange
OD	Olive Drab
P	Purple
PK	Pink
R	Red
S	Silver
T	Tan
TQ	Turquoise
V	Violet
W	White
Y	Yellow

FIG B−1

FAA Form 7233−1, Flight Plan For Military/DoD, Civilian Stereo Route Flight Plan Use Only

PRIVACY ACT STATEMENT: This statement is provided pursuant to the Privacy Act of 1974, 5 USC § 552a: The authority for collecting this information is contained in 49 U.S.C. §§ 40113, 44702, 44703, 44709, and 14 C.F.R. Part 6 - [Part 61, 63, 65, or 67. The principal purpose for which the information is intended to be used is to allow you to submit your flight plan. Submission of the data is voluntary. Failure to provide all required information may result in you not being able to submit your flight plan. The information collected on this form will be included in a Privacy Act System of Records known as DOT/FAA 847, titled "Aviation Records on Individuals" and will be subject to the routine uses published in the System of Records Notice (SORN) for DOT/FAA 847 (see www.dot.gov/privacy/privacyactnotices).

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FLIGHT PLAN U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION	(FAA USE ONLY) ☐ PILOT BRIEFING ☐ VNR ☐ STOPOVER	TIME STARTED	SPECIALIST INITIALS

1. TYPE	2. AIRCRAFT IDENTIFICATION	3. AIRCRAFT TYPE / SPECIAL EQUIPMENT	4. TRUE AIRSPEED	5. DEPARTURE POINT	6. DEPARTURE TIME		7. CRUISING ALTITUDE
					PROPOSED (Z)	ACTUAL (Z)	
VFR IFR DVFR			KTS				

8. ROUTE OF FLIGHT

9. DESTINATION (Name of airport and city)	10. EST. TIME ENROUTE		11. REMARKS
	HOURS	MINUTES	

12. FUEL ON BOARD		13. ALTERNATE AIRPORT(S)	14. PILOT'S NAME, ADDRESS & TELEPHONE NUMBER & AIRCRAFT HOME BASE	15. NUMBER ABOARD
HOURS	MINUTES		17. DESTINATION CONTACT/TELEPHONE (OPTIONAL)	

16. COLOR OF AIRCRAFT	CIVIL AIRCRAFT PILOTS. FAR Part 91 requires you file an IFR flight plan to operate under instrument flight rules in controlled airspace. Failure to file could result in a civil penalty not to exceed $1,000 for each violation (Section 901 of the Federal Aviation Act of 1958, as amended). Filing of a VFR flight plan is recommended as a good operating practice. See also Part 99 for requirements concerning DVFR flight plans.

FAA Form 7233-1 (8-82)
Electronic Version (Adobe)

CLOSE VFR FLIGHT PLAN WITH _______________ FSS ON ARRIVAL

MILITARY STOPOVER (FAA USE ONLY)

TYPE ☐ IFR ☐ VFR	AIRCRAFT IDENTIFICATION	AIRCRAFT TYPE/SPECIAL EQUIPMENT	REMARKS
DEPARTURE POINT	DESTINATION	ETA	

TAS	DEP. PT	ETD	ALTITUDE	ROUTE OF FLIGHT	DESTINATION	ETE	REMARKS
KTS							
KTS							
KTS							
KTS							

REMARKS	INITIALS

FAA Form 7233-1 (8-82) Electronic Version (Adobe)

SAMPLE

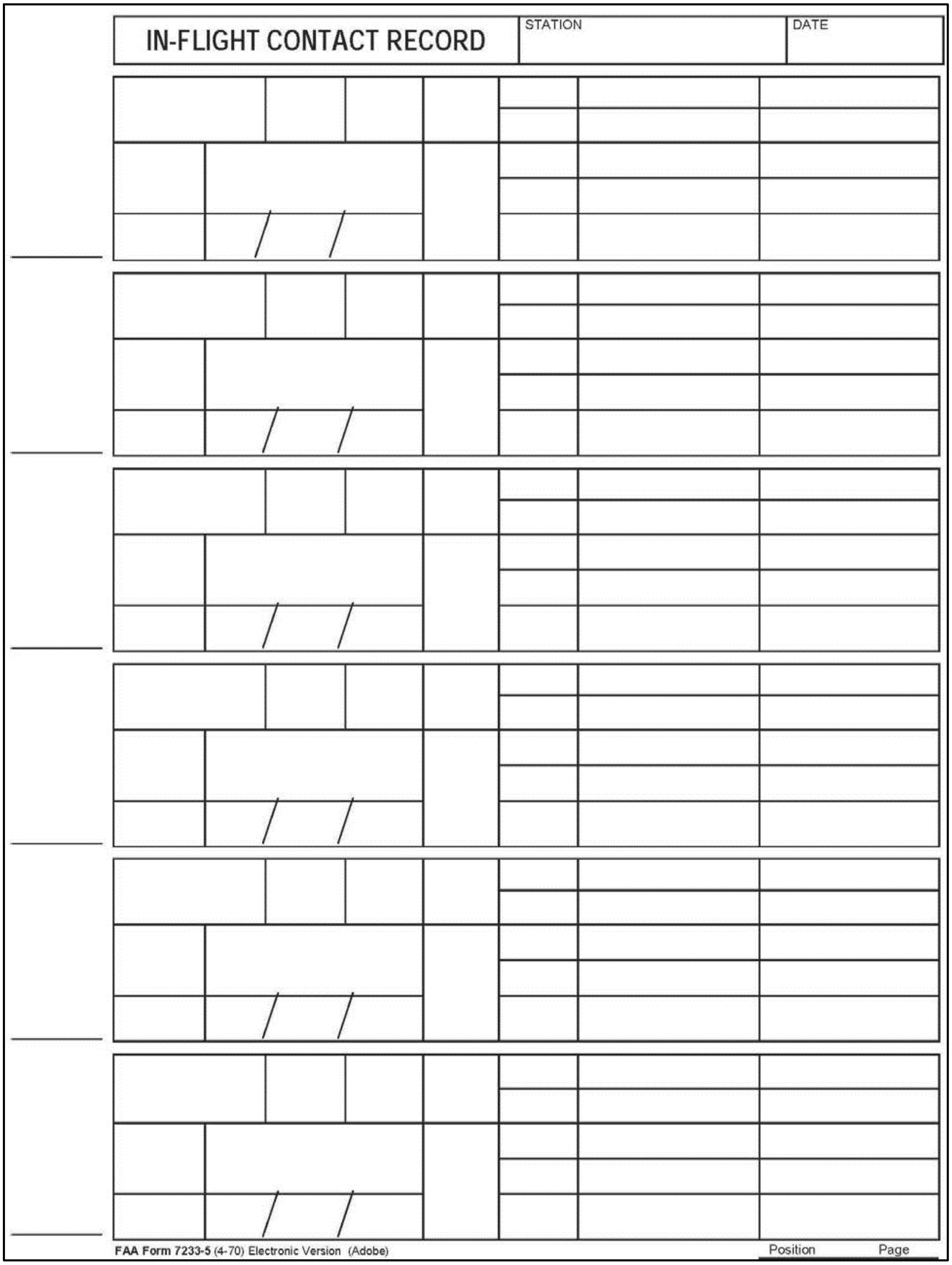
SAMPLE

NOTE−
Current FAA Form 7233−1 is available at https://www.faa.gov/forms/.

Appendix C. Other FAA Forms

FIG C−1

Inflight Contact Record



IN-FLIGHT CONTACT RECORD

STATION

DATE

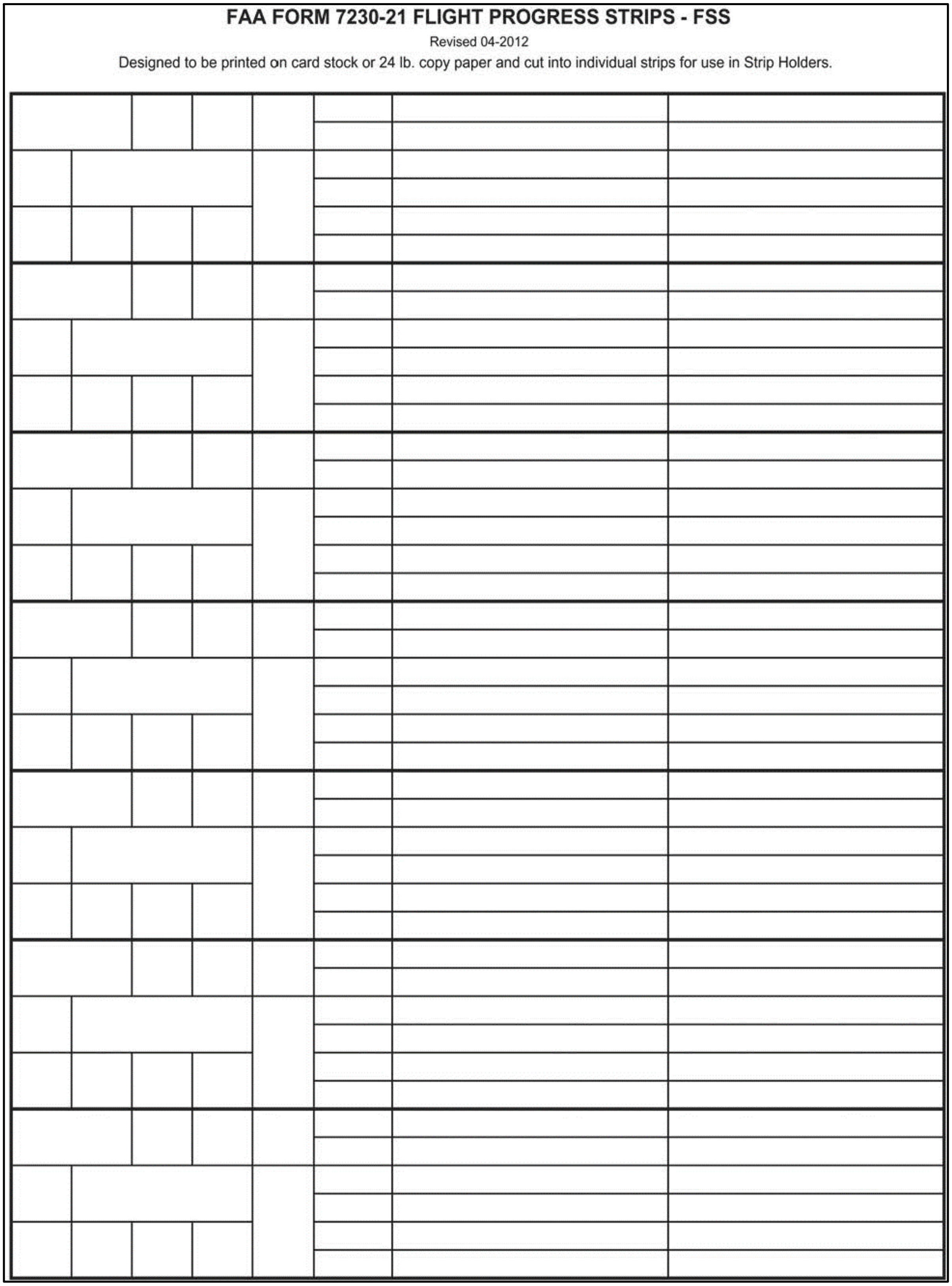
FAA Form 7233-5 (4-70) Electronic Version (Adobe)

Position

Page

FIG C−2

FAA Form 7230−21 Flight Progress Strips − FSS



FAA FORM 7230-21 FLIGHT PROGRESS STRIPS - FSS

Revised 04-2012

Designed to be printed on card stock or 24 lb. copy paper and cut into individual strips for use in Strip Holders.

FIG C−3

Position Logs

1. STATION	2. DATE	3. POSITION

4. TIME (z) STARTED	5. AIRCRAFT IDENTIFICATION	6. DEPARTURE POINT	7. DESTINATION	8. REMARKS	9. BRIEFER

FAA Form 7233-2 (6-91) Supersedes Previous Edition Electronic Version (Adobe)

Appendix D. Service B Message Formats

NOTE–
After each message format there are examples. The following format will be used to indicate the Message Number (MN) and Reference Data (RD) fields:
JNU/CYKA515 (MN) *JNU/CYKA514 (RD)*

1. ICAO Supplementary Flight Plan (SPL) Message. The ICAO supplementary flight plan message is sent from an addressee with information additional to that already transmitted in a flight plan (FPL) message. This message does require an acknowledgement within the NAS and Canada. If this message is sent to any other facility outside the NAS, an acknowledgement is not required.

‘(SPL’	MN	RD	‘-‘	ACID	SSR	‘-‘	ICAO DEP PT	TIME	EOL
‘-‘	ICAO DEST	ETE	ICAO ALT DEST	EOL					
‘-‘	ICAO REMARKS	EOL							
‘-‘	SUPPLEMENTARY INFORMATION	‘)’	EOL						

a. ‘(**SPL**’ is the ASCII text string used for an ICAO flight plan.

b. MN is the message number. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

c. RD is the reference data. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

d. ACID is the aircraft ID and is defined to be one alphabetic character followed by one to six alphanumeric characters.

e. SSR is the beacon code and is optional. If present, the format is **/adddd**, where:

a – alphabetic character

d – numeric character; may contain a value from 0 to 7 (note: all zeros are not allowed)

f. ICAO DEP PT is the departure point. The format is four alphabetic characters.

g. TIME is the departure time. The format is four numeric characters. The first two characters representing hours from 00 to 23 and the last two characters representing minutes from 00 to 59.

h. EOL is a string of one carriage return followed by a line feed or two carriage returns followed by a line feed.

i. ICAO DEST is the destination. The format is four alphabetic characters.

j. ETE is the estimated time en route. The first two digits are 00 to 99 and the last two digits are 00 to 59.

k. ICAO ALT DEST is optional. If present, ICAO ALT DEST is a space character followed by four alphabetic characters or four alphabetic characters followed by a space followed by four alphabetic characters.

l. ICAO REMARKS is other information and is 1–325 displayable characters. It may include embedded EOL sequences.

m. SUPPLEMENTARY INFORMATION is the endurance, persons on board, emergency radio, survival equipment, jackets, dinghies, aircraft color and markings, remarks, and/or pilot-in-command; each separated by a space. It may include embedded EOL sequences. The format is:

E/ followed by four NUMERICS giving the fuel endurance in hours and minutes

P/ for outside the NAS the format is followed by 1, 2, or 3 NUMERICS giving the total number of persons on board, or "TBN" (to be notified) if the total number of persons is not known at the time of filing, when so prescribed by the appropriate ATS authority. For inside the NAS the format is followed by 1−30 alphanumeric, space, and backward slash (\) characters giving the total number of persons on board, when so prescribed by the appropriate ATS authority.

R/ followed by one or more of the following, without spaces:

U − if frequency 243.0 MHz (UHF) is available,

V − if frequency 121.5 MHz (VHF) is available,

E − if emergency locator transmitter (ELT) is available

S/ followed by one or more of the following, without spaces:

P − if polar survival equipment is carried,

D − if desert survival equipment is carried,

M − if maritime survival equipment is carried,

J − if jungle survival equipment is carried

J/ followed by one or more of the following, without spaces:

L − if the life jackets are equipped with lights,

F − if they are equipped with fluorescein, followed by space followed by

U − if any life jacket radio is equipped with UHF on frequency 243.0 MHz,

V − if any life jacket radio is equipped with VHF on frequency 121.5 MHz

D/ followed by one or more of the following, separated by spaces:

Two NUMERICS giving the number of dinghies carried,

Three NUMERICS giving the total capacity, in persons carried, of all dinghies

C if dinghies are covered,

The color of the dinghies (for example, RED).

A/ followed by 0 to 500 A/N, space, and colon (:) characters indicating the color of the aircraft and significant markings (this may include the aircraft registration)

N/ followed by 0 to 500 A/N, space, and colon (:) characters indicating any other survival equipment carried and any other useful remarks

C/ followed by 0 to 201 alphanumeric, space, and colon (:) characters indicating the pilot information

EXAMPLE−
*(SPL**JNU/CYKA515**<u>JNU/CYKA514</u>−TVFR30−KSEA1414*
−CYVR0400
−DOF/170428 RMK/OUT OF AREA OASIS TO NAV CANADA FIMS TEST DO NOT POST
−E/0400 P/2 R/U S/P J/U D/01 006 C ORANGE A/RED WHITE N/SPOT GEN3 WIFE JANE DOE 555:555:6666 C/JOHN DOE 555:555:5555)

2. Proposed ICAO Modification (CHG) Message. The proposed ICAO modification message is sent from an addressee when any change is to be made to basic flight plan data contained in a previously transmitted FPL message. If this message is sent to an ARTCC, this message requires either an ICAO Acknowledgement message or an ICAO rejection message. This message does require an acknowledgement within the NAS and Canada. If this message is sent to any other facility outside the NAS, an acknowledgement is not required.

‘(CHG’	MN	RD	‘-‘	AC ID	‘-‘	ICAO DEP PT	TIME	‘-‘	ICAO DEST

‘-‘	ICAO REMARKS	‘-‘	AMENDMENT	‘)’	EOL

a. ‘(**CHG**’ is the ASCII text string used for an ICAO flight plan.

b. MN is the message number. The format is a(a)(a)(a)/a(a)(a)(a)ddd, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

c. RD is the reference data. The format is a(a)(a)(a)/a(a)(a)(a)ddd, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

d. ACID is the aircraft ID and is defined to be one alphabetic character followed by one to six alphanumeric characters.

e. ICAO DEP PT is the departure point. The format is four alphabetic characters.

f. TIME is the departure time. The format is four numeric characters. The first two characters representing hours from 00 to 23 and the last two characters representing minutes from 00 to 59.

g. ICAO DEST is the destination. The format is four alphabetic characters.

h. ICAO REMARKS is other information and is “DOF/” portion if available, else “–0”.

i. AMENDMENT is the amended data. It may include multiple fields separated by oblique strokes. It may include embedded EOL sequences. The format is **[a]/[b]** where:

a – One or two numeric characters representing the type number of the field to be amended two

b – The complete and amended data of the field indicated in (a), constructed as specified for that field.

NOTE–
1. *If any part of Field 13 (ICAO DEP PT or TIME) is modified and ICAO DEP PT contains “ZZZZ” then the entire contents of Field 18 (Other Information) must be included in Field 22 (AMENDMENT).*

2. *If any part of Field 16 (ICAO DEST, ETE, or ICAO ALT DEST) is modified and ICAO DEST contains “ZZZZ” then the entire contents of Field 18 (Other Information) must be included in Field 22 (AMENDMENT).*

j. EOL is a string of one carriage return followed by a line feed or two carriage returns followed by a line feed.

NOTE–
Transmit CHG messages on proposed FPs:

EXAMPLE–
*(CHG**JNU/KSEA518**JNU/CYKA514–TVFR30–KSEA1414–CYVR–DOF/170428*
–15/N0120A055 DCT
–16/CYVR0330 PAJN)

3. Active ICAO Modification (MOD) Message. The active ICAO modification message is sent from an addressee when any change is to be made to basic flight plan data contained in a previously transmitted FPL and/or DEP message for an active flight plan. This message does require an acknowledgement within the NAS and Canada. If this message is sent to any other facility outside the NAS, an acknowledgement is not required.

'(MOD'	MN	RD	'-'	ACID	SSR	'-'	ICAO DEP PT	'-'	ICAO DEST
'-'	AMENDMENT	')'	EOL						

a. '(**MOD**' is the ASCII text string used for an ICAO flight plan.

b. MN is the message number. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

c. RD is the reference data. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

d. ACID is the aircraft ID and is defined to be one alphabetic character followed by one to six alphanumeric characters.

e. SSR is the beacon code and is optional. If present, the format is **/adddd**, where:

a – alphabetic character

d – numeric character; may contain a value from 0 to 7 (note: all zeros are not allowed)

f. ICAO DEP PT is the departure point. The format is four alphabetic characters.

g. ICAO DEST is the destination. The format is four alphabetic characters.

h. AMENDMENT is the amended data. It may include multiple fields separated by oblique strokes. It may include embedded EOL sequences. The format is **[a]/[b]** where:

a – One or two numeric characters representing the type number of the field to be amended.

b – The complete and amended data of the field indicated in (a), constructed as specified for that field.

i. EOL is a string of one carriage return followed by a line feed or two carriage returns followed by a line feed.

NOTE–
Transmit MOD messages on Active FPs.

EXAMPLE–
*(MOD**JNU/CYKA523**JNU/CYKA514–TVFR30–KSEA–CYVR*
–10/A/S
–15/N0120VFR DCT JNU DCT
–16/CYVR0400)

4. ICAO Arrival (ARR) Message. The ICAO arrival message is sent from an addressee when a flight, for which basic flight plan data has been previously distributed, has been closed. This message does require an acknowledgement within the NAS and Canada. If this message is sent to any other facility outside the NAS, an acknowledgement is not required.

'(ARR'	MN	RD	'-'	ACID	SSR	'-'	ICAO DEP PT	TIME
'-'	ICAO DEST	TIME	')'	EOL				

a. ‘(**ARR**’ is the ASCII text string used for an ICAO flight plan.

b. MN is the message number. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

c. RD is for receipt only and is optional. If present, it is the reference data. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

d. ACID is the aircraft ID and is defined to be one alphabetic character followed by one to six alphanumeric characters.

e. SSR is the beacon code and is optional. If present, the format is **/adddd**, where:

a – alphabetic character

d – numeric character; may contain a value from 0 to 7 (note: all zeros are not allowed)

f. ICAO DEP PT is the departure point. The format is four alphabetic characters.

g. TIME is the departure time. The format is four numeric characters. The first two characters representing hours from 00 to 23 and the last two characters representing minutes from 00 to 59.

h. EOL is a string of one carriage return followed by a line feed or two carriage returns followed by a line feed.

EXAMPLE–
(ARRJNU/CYKA524JNU/CYKA514–TVFR30–KSEA1323–CYVR1339)

5. ICAO Cancellation (CNL) Message. The ICAO cancellation message is sent from an addressee when a flight, for which basic flight plan data has been previously distributed, has been cancelled. If this message is sent to an ARTCC, this message requires either an ICAO acknowledgement message or an ICAO rejection message. This message does require an acknowledgement within the NAS and Canada. If this message is sent to any other facility outside the NAS, an acknowledgement is not required.

‘(CNL’	MN	RD	‘-‘	ACID	‘-‘	ICAO DEP PT	TIME	‘-‘	ICAO DEST
‘-‘	ICAO REMARKS	‘)’	EOL						

a. ‘(**CNL**’ is the ASCII text string used for an ICAO cancellation.

b. MN is the message number. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

c. RD is the reference data. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

d. ACID is the aircraft ID and is defined to be one alphabetic character followed by one to six alphanumeric characters.

e. ICAO DEP PT is the departure point. The format is four alphabetic characters.

f. TIME is the estimated departure time. The format is four numeric characters. The first two characters representing hours from 00 to 23 and the last two characters representing minutes from 00 to 59.

g. ICAO DEST is the destination. The format is four alphabetic characters.

h. ICAO REMARKS is other information and is “DOF/” portion if available, else “−0”.

i. EOL is a string of one carriage return followed by a line feed or two carriage returns followed by a line feed.

EXAMPLE−
(CNLJNU/CYKA521JNU/CYKA514−TVFR30−KSEA1414−CYVR−DOF/170428)

6. ICAO Departure (DEP) Message. An ICAO departure message is a notice of an inbound ICAO flight to an airport associated with an addressed FSS. This message does require an acknowledgement within the NAS and Canada. If this message is sent to any other facility outside the NAS, an acknowledgement is not required.

‘(DEP’	MN	RD	‘-‘	ACID	SSR	‘-‘	ICAO DEP PT	TIME	‘-‘
ICAO DEST	‘-‘	ICAO REMARKS	‘)’	EOL					

a. ‘(**DEP**’ is the ASCII text string used for an ICAO flight plan.

b. MN is the message number. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a − alphabetic character

d – numeric character

Parentheses indicate optional character.

c. RD is the reference data. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a − alphabetic character

d – numeric character

Parentheses indicate optional character.

d. ACID is the aircraft ID and is defined to be one alphabetic character followed by one to six alphanumeric characters.

e. SSR is the beacon code and is optional. If present, the format is **/adddd**, where:

a − alphabetic character

d – numeric character; may contain a value from 0 to 7 (note: all zeros are not allowed)

f. ICAO DEP PT is the departure point. The format is four alphabetic characters.

g. TIME is the departure time. The format is four numeric characters. The first two characters representing hours from 00 to 23 and the last two characters representing minutes from 00 to 59.

h. ICAO DEST is the destination. The format is four alphabetic characters.

i. ICAO REMARKS is other information and is 1−325 displayable characters. It may include embedded EOL sequences.

j. EOL is a string of one carriage return followed by a line feed or two carriage returns followed by a line feed.

NOTE−
For Out-of-Area FPs, send the DEP message to the Departure tie-in facility only; in this example, transmit the DEP to KSEAYFYX only.

EXAMPLE−
*(DEP**JNU/KSEA522**JNU/CYKA514−TVFR30−KSEA1323−CYVR−DOF/170428 RMK/OUT OF AREA OASIS TO NAV CANADA FIMS TEST DO NOT POST)*

7. Proposed ICAO FPL Message. A proposed ICAO flight plan message is a notice of a proposed ICAO flight that is departing outside of the flight plan area of the originating facility. This message does require an acknowledgement within the NAS and Canada. If this message is sent to any other facility outside the NAS, an acknowledgement is not required.

‘(FPL’	MN	RD	‘-‘	ACID	SSR	‘-‘	TYPE FLT	EOL
‘-‘	ICAO ACTYPE	‘-‘	EQUIP	EOL				
‘-‘	ICAO DEP PT	TIME	EOL					
‘-‘	AIRSPEED	ALTITUDE	SP	ROUTE	EOL			
‘-‘	ICAO DEST	ETE	ICAO ALT DEST	EOL				
‘-‘	ICAO REMARKS	CLOSURE POINTS	‘)’	EOL				

a. ‘(**FPL**’ is the ASCII text string used for an ICAO flight plan.

b. MN is the message number. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

c. RD is for receipt only and is optional. If present, it is the reference data. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

d. ACID is the aircraft ID and is defined to be one alphabetic character followed by one to six alphanumeric characters.

e. SSR is the beacon code and is optional. If present, the format is **/adddd**, where:

a – alphabetic character

d – numeric character; may contain a value from 0 to 7 (note: all zeros are not allowed)

f. TYPE FLT is the type of Flight. TYPE FLT is one or two alphabetic characters. The first character is V, Y, Z and the second is S, N, G, M, X.

g. EOL is a string of one carriage return followed by a line feed or two carriage returns followed by a line feed.

h. ICAO ACTYPE is the aircraft type. The format is two to eight alphanumeric and slash characters.

i. EQUIP is the equipment. The format is up to 76 alphanumeric and slash characters. It may include embedded EOL sequences immediately prior to EQUIP and/or between the Comm/Nav and Transponder portions of EQUIP.

j. ICAO DEP PT is the departure point. The format is four alphabetic characters.

k. TIME is the departure time. The format is four numeric characters. The first two characters representing hours from 00 to 23 and the last two characters representing minutes from 00 to 59.

l. AIRSPEED is the true airspeed. It is the alphanumeric character ‘M’ followed by three numeric characters, or the alphanumeric character ‘K’ or ‘N’ followed by four numeric characters.

m. ALTITUDE is the requested altitude. It is three to seven alphanumeric characters. The format is:

(1) Fddd

(2) Sdddd

(3) Addd

(4) Mdddd

(5) VFR

(6) VFR/ddd

where d – numeric character.

n. SP is a single ASCII space character.

o. ROUTE is the route of flight and is a string of 0 to 558 displayable characters. It may include embedded EOL sequences.

p. ICAO DEST is the destination. The format is four alphabetic characters.

q. ETE is the estimated time en route. The first two digits are 00 to 99 and the last two digits are 00 to 59.

r. ICAO ALT DEST is optional. If present, ICAO ALT DEST is a space character followed by four alphabetic characters or four alphabetic characters followed by a space followed by four alphabetic characters.

s. ICAO REMARKS is other information and is 1–325 displayable characters. It may include embedded EOL sequences.

t. CLOSURE POINTS is the closure points field address(es). It is appended to the end of the ICAO REMARKS preceded by the "RMK/" indicator. The format is **xx=address(es)**, where xx is 'CP' address(es) is up to 16 8-character addresses with no embedded spaces.

EXAMPLE–
*(FPL**JNU/KSEA516**JNU/CYKA514–TVFR30–VG*
–P28A/L–S/S
–KSEA1414
–N0220F055 DCT
–CYVR0400
–DOF/170428 RMK/OUT OF AREA OASIS TO NAV CANADA FIMS TEST DO NOT POST CP=CYKAYFYX

8. ICAO FPL Message (Proposed-Inbound). The ICAO flight plan message is a notice of an inbound ICAO flight to an airport associated with an addressed FSS. If this message is sent to an ARTCC, this message requires either an ICAO acknowledgement message or an ICAO rejection message. This message does require an acknowledgement within the NAS and Canada. If this message is sent to any other facility outside the NAS, an acknowledgement is not required.

'(FPL'	MN	RD	'-'	ACID	SSR	'-'	TYPE FLT	EOL
'-'	ICAO ACTYPE	'-'	EQUIP	EOL				
'-'	ICAO DEP PT	TIME	EOL					
'-'	AIRSPEED	ALTITUDE	SP	ROUTE	EOL			
'-'	ICAO DEST	ETE	ICAO ALT DEST	EOL				
'-'	ICAO REMARKS	')'	EOL					

a. '**(FPL**' is the ASCII text string used for an ICAO flight plan.

b. MN is the message number. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

c. RD is for receipt only and is optional. If present, it is the reference data. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

d. ACID is the aircraft ID and is defined to be one alphabetic character followed by one to six alphanumeric characters.

e. SSR is the beacon code and is optional. If present, the format is **/adddd**, where:

a – alphabetic character

d – numeric character; may contain a value from 0 to 7 (note: all zeros are not allowed)

f. TYPE FLT is the type of flight. TYPE FLT is one or two alphabetic characters. The first character is V, Y, Z and the second is S, N, G, M, X.

g. EOL is a string of one carriage return followed by a line feed or two carriage returns followed by a line feed.

h. ICAO ACTYPE is the aircraft type. The format is two to eight alphanumeric and slash characters.

i. EQUIP is the equipment. The format is up to 76 alphanumeric and slash characters. It may include embedded EOL sequences immediately prior to EQUIP and/or between the Comm/Nav and Transponder portions of EQUIP.

j. ICAO DEP PT is the departure point. The format is four alphabetic characters.

k. TIME is the departure time. The format is four numeric characters. The first two characters representing hours from 00 to 23 and the last two characters representing minutes from 00 to 59.

l. AIRSPEED is the true airspeed. It is the alphanumeric character 'M' followed by three numeric characters, or the alphanumeric character 'K' or 'N' followed by four numeric characters.

m. ALTITUDE is the requested altitude. It is three to seven alphanumeric characters. The format is:

(1) Fddd

(2) Sdddd

(3) Addd

(4) Mdddd

(5) VFR

(6) VFR/ddd

where d – numeric character.

n. SP is a single ASCII space character.

o. ROUTE is the route of flight and is a string of 0 to 558 displayable characters. It may include embedded EOL sequences.

p. ICAO DEST is the destination. The format is four alphabetic characters.

q. ETE is the estimated time en route. The first two digits are 00 to 99 and the last two digits are 00 to 59.

r. ICAO ALT DEST is optional. If present, ICAO ALT DEST is a space character followed by four alphabetic characters or four alphabetic characters followed by a space followed by four alphabetic characters.

s. ICAO REMARKS is other information and is 1−325 displayable characters. It may include embedded EOL sequences.

NOTE–
The FPL message will only contain an MN field; all of the subsequent messages on this FP will use this MN as their RD field:

EXAMPLE–
(FPLJNU/CYKA514−TVFR30−VG
−P28A/L−S/S
−KSEA1414
−N0220F055DCT
−CYVR0400
−DOF/170428 RMK/OUT OF AREA OASIS TO NAV CANADA FIMS TEST DO NOT POST)

9. ICAO Acknowledgement (ACK) Message. The ICAO acknowledgement message is sent from an ARTCC to indicate that the receipt of a message has occurred.

NOTE–
This message is received only; FS21/OASIS will never transmit this message.

ACK ID	SP	MESSAGE TYPE	MSGNUM	SP	ORIGIN	SP	
ACID	SP	ICAO DEP PT	SP	TIME	SP	ICAO DEST	EOL

a. ACK ID is the character string 'ACK'.

b. SP is a single ASCII space character.

c. MESSAGE TYPE contains the characters 'FPL', 'CHG', or 'CNL'.

d. MSGNUM is only present if the original FPL message contained a message number. If present, MSGNUM is '/' followed by that message number in the format of three numeric characters in the range 001 to 999.

e. ORIGIN is three or four alphabetic characters which identify the origin of the message.

f. ACID is the aircraft ID and is defined to be one alphabetic character followed by one to six alphanumeric characters.

g. ICAO DEP PT is the departure point. The format is four alphabetic characters.

h. TIME is the departure time. The format is four numeric characters. The first two characters representing hours from 00 to 23 and the last two characters representing minutes from 00 to 59.

i. ICAO DEST is the destination. The format is four alphabetic characters. For messages originating from Honolulu ARTCC, the ICAO DEST is optional.

j. EOL is a string of one carriage return followed by a line feed or two carriage returns followed by a line feed.

10. ICAO Reject (REJ) Message. The ICAO reject message is sent from an ARTCC to indicate that the receipt of a message has occurred but rejected.

NOTE–
This message is received only; FS21/OASIS will never transmit this message.

ACK ID	SP	MESSAGE TYPE	MSGNUM	SP	ORIGIN	SP	TEXT	EOL

a. ACK ID is the character string 'REG'.

b. SP is a single ASCII space character.

c. MESSAGE TYPE contains the characters 'FPL', 'CHG', or 'CNL'.

d. MSGNUM is only present if the original FPL message contained a message number. If present, MSGNUM is '/' followed by that message number in the format of three numeric characters in the range 001 to 999.

e. ORIGIN is three or four alphabetic characters which identify the origin of the message.

f. TEXT is a set of ASCII characters that contains the reason that the message is being rejected and the contents of the original message. TEXT may contain embedded EOL sequences. For messages originating from Honolulu ARTCC, TEXT is the following set of fields:

ACID	SP	ICAO DEP PT	SP	TIME	SP	ICAO DEST

(1) ACID is the aircraft ID and is defined to be one alphabetic character followed by one to six alphanumeric characters.

(2) ICAO DEP PT is the departure point. The format is four alphabetic characters.

(3) TIME is the departure time. The format is four numeric characters. The first two characters representing hours from 00 to 23 and the last two characters representing minutes from 00 to 59.

(4) ICAO DEST is the destination. The format is four alphabetic characters.

g. EOL is a string of one carriage return followed by a line feed or two carriage returns followed by a line feed.

11. ICAO Logical Acknowledgement (LAM) Message. The ICAO LAM is sent from an addressee to indicate that the receipt of a message has occurred. The reference data (RD) contains the reference number, which is the message number (MN), of the message being responded to.

'(LAM'	MN	RD	')'	EOL

a. '(**LAM**' is the ASCII text string used for an ICAO flight plan.

b. MN is the message number. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

c. RD is the reference data. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

d. EOL is a string of one carriage return followed by a line feed or two carriage returns followed by a line feed.

NOTE–
If you are going to manually generate this message, then you have to know the MN of the message you are replying to.

EXAMPLE–
*(LAM**CYKA/PAJN002**JNU/CYKA514) – LAM received on the FPL example transmitted above*
*(LAM**CYKA/PAJN001**JNU/CYKA515) – LAM received on the SPL example transmitted above*

12. ICAO Logical Rejection Message (LRM). The ICAO LRM is sent from an addressee to indicate that the receipt of a message has occurred but contained an error and has been rejected by the receiving system. The reference data (RD) contains the reference number (i.e., message number (MN)) of the message being responded to.

'(LRM'	MN	RD	'–'	ICAO REMARKS	')'	EOL

a. '(**LRM**' is the ASCII text string used for an ICAO logical rejection.

b. MN is the message number. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

c. RD is the reference data. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

d. ICAO REMARKS is from the other information field and the format is **RMK/code/field/text**, where:

(1) Code. Two numeric characters comprising the error code.

NOTE–
Error code 57 will be used for any error that is not field specific and that is not identified in Table E – Error Codes.)

(2) Field. Two numeric characters comprising the field in error or "00" if the error is not field specific.

(3) Text. The contents of the message that caused the error when the error is field specific. When the error is non-field specific, a descriptive error message shall be included.

e. EOL is a string of one carriage return followed by a line feed or two carriage returns followed by a line feed. EOL is a string of 1 carriage return followed by a line feed or 2 carriage returns followed by a line feed.

NOTE–
If you are going to manually generate this message, then you have to know the MN of the message you are replying to.

EXAMPLE–
*(LRM**CYKA**/**PAJN001**<u>JNU/CYKA515</u>–RMK/49/19/INVALID SUPPLEMENTARY INFORMATION ELEMENT)*

An LRM received on the SPL example transmitted above if the SPL was bad.

13. ICAO Search and Rescue (SAR) Messages. An ICAO SAR message consists of three different alert types: the INCERFA, the ALERFA, and the DETRESFA. These messages are similar to the QALQ, INREQ, and ALNOT messages. This message can be forwarded between domestic facilities, which is the case for MBO and AMOC. This message does not require acknowledgment.

'(ALR'	MN	RD	'-'	ALERT PHASE	'/'	ORIGIN	'/'	FILLER	EOL
'-'	ACID	SSR	'-'	TEXT	')'	EOL			

a. '(**ALR**' is the ASCII text string used for an ICAO SAR Messages.

b. MN is the message number. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

c. RD is the reference data. The format is **a(a)(a)(a)/a(a)(a)(a)ddd**, where:

a – alphabetic character

d – numeric character

Parentheses indicate optional character.

d. ALERT PHASE

(1) INCERFA

(2) ALERTFA

(3) DETRESFA

e. ORIGIN is eight alpha characters.

f. FILLER is a string of characters with the size dependent on the alert type; not to exceed the line length of 69 characters.

g. EOL is a string of one carriage return followed by a line feed or two carriage returns followed by a line feed.

h. ACID is the aircraft ID and is defined to be one alphabetic character followed by one to six alphanumeric characters.

i. SSR is the beacon code and is optional. If present, the format is **/adddd**, where:

a – alphabetic character

d – numeric character; may contain a value from 0 to 7 (note: all zeros are not allowed)

j. TEXT is a string of characters including embedded EOL sequences. The number of characters between each EOL will not exceed 69 characters. SAR messages are limited to 20 lines of text separated by EOL sequences.

NOTE–
ICAO SAR Cancellation Message*s – The ICAO SAR cancellation format is the same as the ICAO SAR message format for foreign ATC with 'CNL' as the first three characters in the FILLER field. This message does not require acknowledgment.*
ICAO SAR Response Messages *– The ICAO SAR response format is the same as the ICAO SAR message format for foreign ATC, with the response in the TEXT field. This message is originated by the site that is the recipient of an ICAO SAR request. The response to the ICAO SAR provides the results or status of the communications search. Also the ICAO SAR response can provide pertinent information about the missing aircraft or provides notification to the destination site if the aircraft is located. This message does not require acknowledgment.*

14. Additional ICAO SVC B Messages Examples.

a. ICAO FPL

FF KZOAZQZX
DTG KOAKYFYX
(FPL–N12345–IG
–SR22/L–S/S
–KSEA1414
–N0220F090 DCT
–PAEN0600
–DOF/170428 RMK/DO NOT POST)

FF PAENYFYX
DTG KOAKYFYX
(FPL–N12345–VG
–SR22/L–S/S
–KSEA1414
–N0220F095 DCT
–PAEN0600
–DOF/170428 RMK/DO NOT POST)

b. ICAO supplementary flight plan (SPL)

FF PAENYFYX
DTG KOAKYFYX
(SPL–N12345–KOAK2100
–PAEN0500KSEA
–DOF/170448 RMK/DO NOT POST
–E/0600 P/3 R/VE S/P J/V D/03 005 C YELLOW A/RED WHITE N/SPOT GEN3 SISTER IN FRESNO 559–555–5555 C/JOE PILOT 555–555–5555)

c. Change proposed time (P−TIME)

FF PAENYFYX
DTG KOAKYFYX
(CHG−N12345−PAEN2315−KOAK−0−13/PAEN2350)

d. Cancel proposed flight plan

FF PAENYFYX
DTG KOAKYFYX
(CNL−N12345−PAEN2200−KOAK−0)

e. Change estimated time en route (ETE) for proposed flight

FF PAENYFYX
DTG KOAKYFYX
(CHG−N12345−KOAK2330−PAEN−0−16/PAEN0130)

f. Change route for proposed flight

FF PAENYFYX
DTG KOAKYFYX
(CHG−N12345−KOAK1800−PAEN−0−15/KOAK−KSEA−PAEN)

g. Departure message

FF PAENYFYX
DTG KOAKYFYX
(DEP−N12345−PAEN1500−KSEA−0)

h. Change of destination for active flight

FF PAENYFYX
DTG KOAKYFYX
(CNL−N12345−PAEN2200−KOAK−0)

NOTE−
To change the destination for an active flight, send a cancellation message to the original destination station and send a new FPL and SPL to the new arrival station. Then send a departure message.

i. Change estimate time of arrival (ETA) for active flight plan

FF PAENYFYX
DTG KOAKYFYX
(MOD−N12345−KOAK−PAEN−16/PAEN2350)

j. Arrival/Closure message

FF PAENYFYX
DTG KOAKYFYX
(ARR−N12345−KOAK1900−PAEN2350)

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PILOT/CONTROLLER GLOSSARY

PURPOSE

a. This Glossary was compiled to promote a common understanding of the terms used in the Air Traffic Control system. It includes those terms which are intended for pilot/controller communications. Those terms most frequently used in pilot/controller communications are printed in ***bold italics***. The definitions are primarily defined in an operational sense applicable to both users and operators of the National Airspace System. Use of the Glossary will preclude any misunderstandings concerning the system's design, function, and purpose.

b. Because of the international nature of flying, terms used in the Lexicon, published by the International Civil Aviation Organization (ICAO), are included when they differ from FAA definitions. These terms are followed by "[ICAO]." For the reader's convenience, there are also cross references to related terms in other parts of the Glossary and to other documents, such as the Code of Federal Regulations (CFR) and the Aeronautical Information Manual (AIM).

c. Terms used in this glossary that apply to flight service station (FSS) roles are included when they differ from air traffic control functions. These terms are followed by "[FSS]."

d. This Glossary will be revised, as necessary, to maintain a common understanding of the system.

EXPLANATION OF CHANGES

e. Terms Added:
CHART SUPPLEMENT
CHART SUPPLEMENT ALASKA
CHART SUPPLEMENT PACIFIC

f. Terms Modified:
AERONAUTICAL INFORMATION PUBLICATION (AIP)
AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER (ATCSCC)
ALPHANUMERIC DISPLAY
ALTITUDE READOUT
AUTOMATED UNICOM
CHART SUPPLEMENT U.S.
NAVAID CLASSES
PRECIPITATION RADAR WEATHER DESCRIPTIONS
ROUTE ACTION NOTIFICATION
SAFETY LOGIC SYSTEM ALERTS
TERMINAL VFR RADAR SERVICE
TIE–IN FACILITY
UNICOM
VOT

g. Editorial/format changes were made where necessary. Revision bars were not used due to the insignificant nature of the changes.

A

AAM−
(See ADVANCED AIR MOBILITY.)

AAR−
(See AIRPORT ARRIVAL RATE.)
(See ADAPTED ROUTES.)

ABBREVIATED IFR FLIGHT PLANS− An authorization by ATC requiring pilots to submit only that information needed for the purpose of ATC. It includes only a small portion of the usual IFR flight plan information. In certain instances, this may be only aircraft identification, location, and pilot request. Other information may be requested if needed by ATC for separation/control purposes. It is frequently used by aircraft which are airborne and desire an instrument approach or by aircraft which are on the ground and desire a climb to VFR-on-top.
(See VFR-ON-TOP.)
(Refer to AIM.)

ABEAM− An aircraft is "abeam" a fix, point, or object when that fix, point, or object is approximately 90 degrees to the right or left of the aircraft track. Abeam indicates a general position rather than a precise point.

ABORT− To terminate a preplanned aircraft maneuver; e.g., an aborted takeoff.

ABRR−
(See AIRBORNE REROUTE)

AC−
(See ADVISORY CIRCULAR.)

ACC [ICAO]−
(See ICAO term AREA CONTROL CENTER.)

ACCELERATE-STOP DISTANCE AVAILABLE− The runway plus stopway length declared available and suitable for the acceleration and deceleration of an airplane aborting a takeoff.

ACCELERATE-STOP DISTANCE AVAILABLE [ICAO]− The length of the take-off run available plus the length of the stopway if provided.

ACDO−
(See AIR CARRIER DISTRICT OFFICE.)

ACKNOWLEDGE− Let me know that you have received and understood this message.

ACL−
(See AIRCRAFT LIST.)

ACLS−
(See AUTOMATIC CARRIER LANDING SYSTEM.)

ACROBATIC FLIGHT− An intentional maneuver involving an abrupt change in an aircraft's attitude, an abnormal attitude, or abnormal acceleration not necessary for normal flight.
(See ICAO term ACROBATIC FLIGHT.)
(Refer to 14 CFR Part 91.)

ACROBATIC FLIGHT [ICAO]− Maneuvers intentionally performed by an aircraft involving an abrupt change in its attitude, an abnormal attitude, or an abnormal variation in speed.

ACTIVE RUNWAY−
(See RUNWAY IN USE/ACTIVE RUNWAY/DUTY RUNWAY.)

ACTUAL NAVIGATION PERFORMANCE (ANP)−
(See REQUIRED NAVIGATION PERFORMANCE.)

ADAPTED ROUTES− Departure and/or arrival routes that are adapted in ARTCC ERAM computers to accomplish inter/intrafacility controller coordination and to ensure that flight data is posted at the proper control positions. Adapted routes are automatically applied to flight plans where appropriate. When the workload or traffic situation permits, controllers may provide radar vectors or assign requested routes to minimize circuitous routing. Adapted routes are usually confined to one ARTCC's area and are referred to by the following names or abbreviations:

a. Adapted Arrival Route (AAR). A specific arrival route from an appropriate en route point to an airport or terminal area. It may be included in a Standard Terminal Arrival (STAR) or a Preferred IFR Route.

b. Adapted Departure Route (ADR). A specific departure route from an airport or terminal area to an en route point where there is no further need for flow control. It may be included in an Instrument Departure Procedure (DP) or a Preferred IFR Route.

c. Adapted Departure and Arrival Route (ADAR). A route between two terminals which are within or immediately adjacent to one ARTCC's area. ADARs are similar to Preferred IFR Routes and may share components, but they are not synonymous.
(See PREFFERED IFR ROUTES.)

ADAR−
(See ADAPTED ROUTES.)

ADDITIONAL SERVICES− Advisory information provided by ATC which includes but is not limited to the following:

a. Traffic advisories.

b. Vectors, when requested by the pilot, to assist aircraft receiving traffic advisories to avoid observed traffic.

c. Altitude deviation information of 300 feet or more from an assigned altitude as observed on a verified (reading correctly) automatic altitude readout (Mode C).

d. Advisories that traffic is no longer a factor.

e. Weather and chaff information.

f. Weather assistance.

g. Bird activity information.

h. Holding pattern surveillance. Additional services are provided to the extent possible contingent only upon the controller's capability to fit them into the performance of higher priority duties and on the basis of limitations of the radar, volume of traffic, frequency congestion, and controller workload. The controller has complete discretion for determining if he/she is able to provide or continue to provide a service in a particular case. The controller's reason not to provide or continue to provide a service in a particular case is not subject to question by the pilot and need not be made known to him/her.
(See TRAFFIC ADVISORIES.)
(Refer to AIM.)

ADF−
(See AUTOMATIC DIRECTION FINDER.)

ADIZ−
(See AIR DEFENSE IDENTIFICATION ZONE.)

ADLY−
(See ARRIVAL DELAY.)

ADMINISTRATOR− The Federal Aviation Administrator or any person to whom he/she has delegated his/her authority in the matter concerned.

ADR−
(See ADAPTED ROUTES.)
(See AIRPORT DEPARTURE RATE.)

ADS [ICAO]−
(See ICAO term AUTOMATIC DEPENDENT SURVEILLANCE.)

ADS−B−
(See AUTOMATIC DEPENDENT SURVEILLANCE−BROADCAST.)

ADS−C−
(See AUTOMATIC DEPENDENT SURVEILLANCE−CONTRACT.)

ADVANCED AIR MOBILITY (AAM)−A transportation system that transports people and property by air between two points in the NAS using aircraft with advanced technologies, including electric aircraft or electric vertical takeoff and landing aircraft, in both controlled and uncontrolled airspace.

ADVISE INTENTIONS− Tell me what you plan to do.

ADVISORY− Advice and information provided to assist pilots in the safe conduct of flight and aircraft movement.
(See ADVISORY SERVICE.)

ADVISORY CIRCULAR (AC)− An FAA publication, advisory and descriptive in nature, which is not regulatory.

ADVISORY FREQUENCY− The appropriate frequency to be used for Airport Advisory Service.
(See LOCAL AIRPORT ADVISORY.)
(See UNICOM.)
(Refer to ADVISORY CIRCULAR NO. 90-66.)
(Refer to AIM.)

ADVISORY SERVICE− Advice and information provided by a facility to assist pilots in the safe conduct of flight and aircraft movement.
(See ADDITIONAL SERVICES.)
(See LOCAL AIRPORT ADVISORY.)
(See RADAR ADVISORY.)
(See SAFETY ALERT.)
(See TRAFFIC ADVISORIES.)
(Refer to AIM.)

ADW−
(See ARRIVAL DEPARTURE WINDOW)

AERIAL REFUELING− A procedure used by the military to transfer fuel from one aircraft to another during flight.
(Refer to VFR/IFR Wall Planning Charts.)

AERODROME− A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure, and movement of aircraft.

AERODROME BEACON [ICAO]− Aeronautical beacon used to indicate the location of an aerodrome from the air.

AERODROME CONTROL SERVICE [ICAO]− Air traffic control service for aerodrome traffic.

AERODROME CONTROL TOWER [ICAO]− A unit established to provide air traffic control service to aerodrome traffic.

AERODROME ELEVATION [ICAO]− The elevation of the highest point of the landing area.

AERODROME TRAFFIC CIRCUIT [ICAO]− The specified path to be flown by aircraft operating in the vicinity of an aerodrome.

AERONAUTICAL BEACON− A visual NAVAID displaying flashes of white and/or colored light to indicate the location of an airport, a heliport, a landmark, a certain point of a Federal airway in mountainous terrain, or an obstruction.

(See AIRPORT ROTATING BEACON.)
(Refer to AIM.)

AERONAUTICAL CHART− A map used in air navigation containing all or part of the following: topographic features, hazards and obstructions, navigation aids, navigation routes, designated airspace, and airports. Commonly used aeronautical charts are:

a. Sectional Aeronautical Charts (1:500,000)− Designed for visual navigation of slow or medium speed aircraft. Topographic information on these charts features the portrayal of relief and a judicious selection of visual check points for VFR flight. Aeronautical information includes visual and radio aids to navigation, airports, controlled airspace, permanent special use airspace (SUA), obstructions, and related data.

b. VFR Terminal Area Charts (1:250,000)− Depict Class B airspace which provides for the control or segregation of all the aircraft within Class B airspace. The chart depicts topographic information and aeronautical information which includes visual and radio aids to navigation, airports, controlled airspace, permanent SUA, obstructions, and related data.

c. En Route Low Altitude Charts− Provide aeronautical information for en route instrument navigation (IFR) in the low altitude stratum. Information includes the portrayal of airways, limits of controlled airspace, position identification and frequencies of radio aids, selected airports, minimum en route and minimum obstruction clearance altitudes, airway distances, reporting points, permanent SUA, and related data. Area charts, which are a part of this series, furnish terminal data at a larger scale in congested areas.

d. En Route High Altitude Charts− Provide aeronautical information for en route instrument navigation (IFR) in the high altitude stratum. Information includes the portrayal of jet routes, identification and frequencies of radio aids, selected airports, distances, time zones, special use airspace, and related information.

e. Instrument Approach Procedure (IAP) Charts− Portray the aeronautical data which is required to execute an instrument approach to an airport. These charts depict the procedures, including all related data, and the airport diagram. Each procedure is designated for use with a specific type of electronic navigation system including NDB, TACAN, VOR, ILS RNAV and GLS. These charts are identified by the type of navigational aid(s)/equipment required to provide final approach guidance.

f. Instrument Departure Procedure (DP) Charts− Designed to expedite clearance delivery and to facilitate transition between takeoff and en route operations. Each DP is presented as a separate chart and may serve a single airport or more than one airport in a given geographical location.

g. Standard Terminal Arrival (STAR) Charts− Designed to expedite air traffic control arrival procedures and to facilitate transition between en route and instrument approach operations. Each STAR procedure is presented as a separate chart and may serve a single airport or more than one airport in a given geographical location.

h. Airport Taxi Charts− Designed to expedite the efficient and safe flow of ground traffic at an airport. These charts are identified by the official airport name; e.g., Ronald Reagan Washington National Airport.

(See ICAO term AERONAUTICAL CHART.)

AERONAUTICAL CHART [ICAO]− A representation of a portion of the earth, its culture and relief, specifically designated to meet the requirements of air navigation.

AERONAUTICAL INFORMATION MANUAL (AIM)− A primary FAA publication whose purpose is to instruct airmen about operating in the National Airspace System of the U.S. It provides basic flight information, ATC Procedures and general instructional information concerning health, medical facts, factors affecting flight safety, accident and hazard reporting, and types of aeronautical charts and their use.

AERONAUTICAL INFORMATION PUBLICATION (AIP) [ICAO]− A publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation.

(See CHART SUPPLEMENT.)

AERONAUTICAL INFORMATION SERVICES (AIS)− A facility in Silver Spring, MD, established by FAA to operate a central aeronautical information service for the collection, validation, and dissemination of

aeronautical data in support of the activities of government, industry, and the aviation community. The information is published in the National Flight Data Digest.
(See NATIONAL FLIGHT DATA DIGEST.)

***AFFIRMATIVE*−** Yes.

AFIS−
(See AUTOMATIC FLIGHT INFORMATION SERVICE − ALASKA FSSs ONLY.)

AFP−
(See AIRSPACE FLOW PROGRAM.)

AHA−
(See AIRCRAFT HAZARD AREA.)

AIM−
(See AERONAUTICAL INFORMATION MANUAL.)

AIP [ICAO]−
(See ICAO term AERONAUTICAL INFORMATION PUBLICATION.)

AIR CARRIER DISTRICT OFFICE− An FAA field office serving an assigned geographical area, staffed with Flight Standards personnel serving the aviation industry and the general public on matters related to the certification and operation of scheduled air carriers and other large aircraft operations.

AIR DEFENSE EMERGENCY− A military emergency condition declared by a designated authority. This condition exists when an attack upon the continental U.S., Alaska, Canada, or U.S. installations in Greenland by hostile aircraft or missiles is considered probable, is imminent, or is taking place.
(Refer to AIM.)

AIR DEFENSE IDENTIFICATION ZONE (ADIZ)− An area of airspace over land or water in which the ready identification, location, and control of all aircraft (except for Department of Defense and law enforcement aircraft) is required in the interest of national security.

Note: ADIZ locations and operating and flight plan requirements for civil aircraft operations are specified in 14 CFR Part 99.

(Refer to AIM.)

AIR NAVIGATION FACILITY− Any facility used in, available for use in, or designed for use in, aid of air navigation, including landing areas, lights, any apparatus or equipment for disseminating weather information, for signaling, for radio-directional finding, or for radio or other electrical communication, and any other structure or mechanism having a similar purpose for guiding or controlling flight in the air or the landing and takeoff of aircraft.
(See NAVIGATIONAL AID.)

AIR ROUTE SURVEILLANCE RADAR− Air route traffic control center (ARTCC) radar used primarily to detect and display an aircraft's position while en route between terminal areas. The ARSR enables controllers to provide radar air traffic control service when aircraft are within the ARSR coverage. In some instances, ARSR may enable an ARTCC to provide terminal radar services similar to but usually more limited than those provided by a radar approach control.

AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC)− A facility established to provide air traffic control service to aircraft operating on IFR flight plans within controlled airspace and principally during the en route phase of flight. When equipment capabilities and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft.
(See EN ROUTE AIR TRAFFIC CONTROL SERVICES.)
(Refer to AIM.)

AIR TAXI− Used to describe a helicopter/VTOL aircraft movement conducted above the surface but normally not above 100 feet AGL. The aircraft may proceed either via hover taxi or flight at speeds more than 20 knots. The pilot is solely responsible for selecting a safe airspeed/altitude for the operation being conducted.

(See HOVER TAXI.)
(Refer to AIM.)

AIR TRAFFIC− Aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.

(See ICAO term AIR TRAFFIC.)

AIR TRAFFIC [ICAO]− All aircraft in flight or operating on the maneuvering area of an aerodrome.

AIR TRAFFIC CLEARANCE− An authorization by air traffic control for the purpose of preventing collision between known aircraft, for an aircraft to proceed under specified traffic conditions within controlled airspace. The pilot-in-command of an aircraft may not deviate from the provisions of a visual flight rules (VFR) or instrument flight rules (IFR) air traffic clearance except in an emergency or unless an amended clearance has been obtained. Additionally, the pilot may request a different clearance from that which has been issued by air traffic control (ATC) if information available to the pilot makes another course of action more practicable or if aircraft equipment limitations or company procedures forbid compliance with the clearance issued. Pilots may also request clarification or amendment, as appropriate, any time a clearance is not fully understood, or considered unacceptable because of safety of flight. Controllers should, in such instances and to the extent of operational practicality and safety, honor the pilot's request. 14 CFR Part 91.3(a) states: "The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft." THE PILOT IS RESPONSIBLE TO REQUEST AN AMENDED CLEARANCE if ATC issues a clearance that would cause a pilot to deviate from a rule or regulation, or in the pilot's opinion, would place the aircraft in jeopardy.

(See ATC INSTRUCTIONS.)
(See ICAO term AIR TRAFFIC CONTROL CLEARANCE.)

AIR TRAFFIC CONTROL− A service operated by appropriate authority to promote the safe, orderly and expeditious flow of air traffic.

(See ICAO term AIR TRAFFIC CONTROL SERVICE.)

AIR TRAFFIC CONTROL CLEARANCE [ICAO]− Authorization for an aircraft to proceed under conditions specified by an air traffic control unit.

Note 1: For convenience, the term air traffic control clearance is frequently abbreviated to clearance when used in appropriate contexts.

Note 2: The abbreviated term clearance may be prefixed by the words taxi, takeoff, departure, en route, approach or landing to indicate the particular portion of flight to which the air traffic control clearance relates.

AIR TRAFFIC CONTROL SERVICE−

(See AIR TRAFFIC CONTROL.)

AIR TRAFFIC CONTROL SERVICE [ICAO]− A service provided for the purpose of:

a. Preventing collisions:

1. Between aircraft; and

2. On the maneuvering area between aircraft and obstructions.

b. Expediting and maintaining an orderly flow of air traffic.

AIR TRAFFIC CONTROL SPECIALIST− A person authorized to provide air traffic control service.

(See AIR TRAFFIC CONTROL.)
(See FLIGHT SERVICE STATION.)
(See ICAO term CONTROLLER.)

AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER (ATCSCC)− An Air Traffic Tactical Operations facility responsible for monitoring and managing the flow of air traffic throughout the NAS, producing a safe, orderly, and expeditious flow of traffic while minimizing delays. The following functions are located at the ATCSCC:

a. Central Altitude Reservation Function (CARF). Responsible for coordinating, planning, and approving special user requirements under the Altitude Reservation (ALTRV) concept.

(See ALTITUDE RESERVATION.)

b. Airport Reservation Office (ARO). Monitors the operation and allocation of reservations for unscheduled operations at airports designated by the Administrator as High Density Airports. These airports are generally known as slot controlled airports. The ARO allocates reservations on a first come, first served basis determined by the time the request is received at the ARO.

(Refer to 14 CFR Part 93.)

(See CHART SUPPLEMENT.)

c. U.S. Notice to Air Missions (NOTAM) Office. Responsible for collecting, maintaining, and distributing NOTAMs for the U.S. civilian and military, as well as international aviation communities.

(See NOTICE TO AIR MISSIONS.)

d. Weather Unit. Monitor all aspects of weather for the U.S. that might affect aviation including cloud cover, visibility, winds, precipitation, thunderstorms, icing, turbulence, and more. Provide forecasts based on observations and on discussions with meteorologists from various National Weather Service offices, FAA facilities, airlines, and private weather services.

e. Air Traffic Organization (ATO) Space Operations and Unmanned Aircraft System (UAS); the Office of Primary Responsibility (OPR) for all space and upper class E tactical operations in the National Airspace System (NAS).

AIR TRAFFIC SERVICE− A generic term meaning:

a. Flight Information Service.

b. Alerting Service.

c. Air Traffic Advisory Service.

d. Air Traffic Control Service:

1. Area Control Service,

2. Approach Control Service, or

3. Airport Control Service.

AIR TRAFFIC ORGANIZATION (ATO) − The FAA line of business responsible for providing safe and efficient air navigation services in the national airspace system.

AIR TRAFFIC SERVICE (ATS) ROUTES − The term "ATS Route" is a generic term that includes "VOR Federal airways," "colored Federal airways," "jet routes," and "RNAV routes." The term "ATS route" does not replace these more familiar route names, but serves only as an overall title when listing the types of routes that comprise the United States route structure.

AIRBORNE− An aircraft is considered airborne when all parts of the aircraft are off the ground.

AIRBORNE DELAY− Amount of delay to be encountered in airborne holding.

AIRBORNE REROUTE (ABRR)− A capability within the Traffic Flow Management System used for the timely development and implementation of tactical reroutes for airborne aircraft. This capability defines a set of aircraft−specific reroutes that address a certain traffic flow problem and then electronically transmits them to En Route Automation Modernization (ERAM) for execution by the appropriate sector controllers.

AIRCRAFT− Device(s) that are used or intended to be used for flight in the air, and when used in air traffic control terminology, may include the flight crew.

(See ICAO term AIRCRAFT.)

AIRCRAFT [ICAO]− Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

AIRCRAFT APPROACH CATEGORY− A grouping of aircraft based on a speed of 1.3 times the stall speed in the landing configuration at maximum gross landing weight. An aircraft must fit in only one category. If it is necessary to maneuver at speeds in excess of the upper limit of a speed range for a category, the minimums for the category for that speed must be used. For example, an aircraft which falls in Category A, but is circling to land at a speed in excess of 91 knots, must use the approach Category B minimums when circling to land. The categories are as follows:

a. Category A− Speed less than 91 knots.

b. Category B− Speed 91 knots or more but less than 121 knots.

c. Category C− Speed 121 knots or more but less than 141 knots.

d. Category D− Speed 141 knots or more but less than 166 knots.

e. Category E− Speed 166 knots or more.

(Refer to 14 CFR Part 97.)

AIRCRAFT CLASSES− For the purposes of Wake Turbulence Separation Minima, ATC classifies aircraft as Super, Heavy, Large, and Small as follows:

a. Super. The Airbus A-380-800 (A388) and the Antonov An-225 (A225) are classified as super.

b. Heavy− Aircraft capable of takeoff weights of 300,000 pounds or more whether or not they are operating at this weight during a particular phase of flight.

c. Large− Aircraft of more than 41,000 pounds, maximum certificated takeoff weight, up to but not including 300,000 pounds.

d. Small− Aircraft of 41,000 pounds or less maximum certificated takeoff weight.

(Refer to AIM.)

AIRCRAFT CONFLICT− Predicted conflict, within EDST of two aircraft, or between aircraft and airspace. A Red alert is used for conflicts when the predicted minimum separation is 5 nautical miles or less. A Yellow alert is used when the predicted minimum separation is between 5 and approximately 12 nautical miles. A Blue alert is used for conflicts between an aircraft and predefined airspace.

(See EN ROUTE DECISION SUPPORT TOOL.)

AIRCRAFT LIST (ACL)− A view available with EDST that lists aircraft currently in or predicted to be in a particular sector's airspace. The view contains textual flight data information in line format and may be sorted into various orders based on the specific needs of the sector team.

(See EN ROUTE DECISION SUPPORT TOOL.)

AIRCRAFT SURGE LAUNCH AND RECOVERY− Procedures used at USAF bases to provide increased launch and recovery rates in instrument flight rules conditions. ASLAR is based on:

a. Reduced separation between aircraft which is based on time or distance. Standard arrival separation applies between participants including multiple flights until the DRAG point. The DRAG point is a published location on an ASLAR approach where aircraft landing second in a formation slows to a predetermined airspeed. The DRAG point is the reference point at which MARSA applies as expanding elements effect separation within a flight or between subsequent participating flights.

b. ASLAR procedures shall be covered in a Letter of Agreement between the responsible USAF military ATC facility and the concerned Federal Aviation Administration facility. Initial Approach Fix spacing requirements are normally addressed as a minimum.

AIRCRAFT HAZARD AREA (AHA)− Used by ATC to segregate air traffic from a launch vehicle, reentry vehicle, amateur rocket, jettisoned stages, hardware, or falling debris generated by failures associated with any of these activities. An AHA is designated via NOTAM as either a TFR or stationary ALTRV. Unless otherwise specified, the vertical limits of an AHA are from the surface to unlimited.

(See CONTINGENCY HAZARD AREA.)
(See REFINED HAZARD AREA.)
(See TRANSITIONAL HAZARD AREA.)

AIRCRAFT WAKE TURBULENCE CATEGORIES− For the purpose of Wake Turbulence Recategorization (RECAT) Separation Minima, ATC groups aircraft into categories ranging from Category A through Category I, dependent upon the version of RECAT that is applied. Specific category assignments vary and are listed in the RECAT Orders.

AIRMEN'S METEOROLOGICAL INFORMATION (AIRMET)− A concise description of an occurrence or expected occurrence of specified en route weather phenomena that may affect the safety of aircraft operations, but at intensities lower than those that require the issuance of a SIGMET. An AIRMET may be issued when any of the following weather phenomena are occurring or expected to occur:

a. Moderate turbulence

b. Low−level windshear

c. Strong surface winds greater than 30 knots

d. Moderate icing

e. Freezing level

f. Mountain obscuration

g. IFR

(See CONVECTIVE SIGMET.)
(See CWA.)
(See GRAPHICAL AIRMEN'S METEOROLOGICAL INFORMATION.)
(See SAW.)
(See SIGMET.)
(Refer to AIM.)

AIRPORT− An area on land or water that is used or intended to be used for the landing and takeoff of aircraft and includes its buildings and facilities, if any.

AIRPORT ADVISORY AREA− The area within ten miles of an airport without a control tower or where the tower is not in operation, and on which a Flight Service Station is located.

(See LOCAL AIRPORT ADVISORY.)
(Refer to AIM.)

AIRPORT ARRIVAL RATE (AAR)− A dynamic input parameter specifying the number of arriving aircraft which an airport or airspace can accept from the ARTCC per hour. The AAR is used to calculate the desired interval between successive arrival aircraft.

AIRPORT DEPARTURE RATE (ADR)− A dynamic parameter specifying the number of aircraft which can depart an airport and the airspace can accept per hour.

AIRPORT ELEVATION− The highest point of an airport's usable runways measured in feet from mean sea level.

(See TOUCHDOWN ZONE ELEVATION.)
(See ICAO term AERODROME ELEVATION.)

AIRPORT LIGHTING− Various lighting aids that may be installed on an airport. Types of airport lighting include:

a. Approach Light System (ALS)− An airport lighting facility which provides visual guidance to landing aircraft by radiating light beams in a directional pattern by which the pilot aligns the aircraft with the extended centerline of the runway on his/her final approach for landing. Condenser-Discharge Sequential Flashing Lights/Sequenced Flashing Lights may be installed in conjunction with the ALS at some airports. Types of Approach Light Systems are:

1. ALSF-1− Approach Light System with Sequenced Flashing Lights in ILS Cat-I configuration.

2. ALSF-2− Approach Light System with Sequenced Flashing Lights in ILS Cat-II configuration. The ALSF-2 may operate as an SSALR when weather conditions permit.

3. SSALF− Simplified Short Approach Light System with Sequenced Flashing Lights.

4. SSALR− Simplified Short Approach Light System with Runway Alignment Indicator Lights.

5. MALSF− Medium Intensity Approach Light System with Sequenced Flashing Lights.

6. MALSR− Medium Intensity Approach Light System with Runway Alignment Indicator Lights.

7. RLLS− Runway Lead-in Light System Consists of one or more series of flashing lights installed at or near ground level that provides positive visual guidance along an approach path, either curving or straight, where special problems exist with hazardous terrain, obstructions, or noise abatement procedures.

8. RAIL− Runway Alignment Indicator Lights− Sequenced Flashing Lights which are installed only in combination with other light systems.

9. ODALS− Omnidirectional Approach Lighting System consists of seven omnidirectional flashing lights located in the approach area of a nonprecision runway. Five lights are located on the runway centerline extended with the first light located 300 feet from the threshold and extending at equal intervals up to 1,500 feet from the threshold. The other two lights are located, one on each side of the runway threshold, at a lateral distance of 40 feet from the runway edge, or 75 feet from the runway edge when installed on a runway equipped with a VASI.

(Refer to FAA Order JO 6850.2, Visual Guidance Lighting Systems.)

b. Runway Lights/Runway Edge Lights− Lights having a prescribed angle of emission used to define the lateral limits of a runway. Runway lights are uniformly spaced at intervals of approximately 200 feet, and the intensity may be controlled or preset.

c. Touchdown Zone Lighting− Two rows of transverse light bars located symmetrically about the runway centerline normally at 100 foot intervals. The basic system extends 3,000 feet along the runway.

d. Runway Centerline Lighting− Flush centerline lights spaced at 50-foot intervals beginning 75 feet from the landing threshold and extending to within 75 feet of the opposite end of the runway.

e. Threshold Lights− Fixed green lights arranged symmetrically left and right of the runway centerline, identifying the runway threshold.

f. Runway End Identifier Lights (REIL)− Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

g. Visual Approach Slope Indicator (VASI)− An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that he/she is "on path" if he/she sees red/white, "above path" if white/white, and "below path" if red/red. Some airports serving large aircraft have three-bar VASIs which provide two visual glide paths to the same runway.

h. Precision Approach Path Indicator (PAPI)− An airport lighting facility, similar to VASI, providing vertical approach slope guidance to aircraft during approach to landing. PAPIs consist of a single row of either two or four lights, normally installed on the left side of the runway, and have an effective visual range of about 5 miles during the day and up to 20 miles at night. PAPIs radiate a directional pattern of high intensity red and white focused light beams which indicate that the pilot is "on path" if the pilot sees an equal number of white lights and red lights, with white to the left of the red; "above path" if the pilot sees more white than red lights; and "below path" if the pilot sees more red than white lights.

i. Boundary Lights− Lights defining the perimeter of an airport or landing area.

(Refer to AIM.)

AIRPORT MARKING AIDS− Markings used on runway and taxiway surfaces to identify a specific runway, a runway threshold, a centerline, a hold line, etc. A runway should be marked in accordance with its present usage such as:

a. Visual.

b. Nonprecision instrument.

c. Precision instrument.

(Refer to AIM.)

AIRPORT REFERENCE POINT (ARP)− The approximate geometric center of all usable runway surfaces.

AIRPORT RESERVATION OFFICE− Office responsible for monitoring the operation of slot controlled airports. It receives and processes requests for unscheduled operations at slot controlled airports.

AIRPORT ROTATING BEACON− A visual NAVAID operated at many airports. At civil airports, alternating white and green flashes indicate the location of the airport. At military airports, the beacons flash alternately white and green, but are differentiated from civil beacons by dualpeaked (two quick) white flashes between the green flashes.

(See INSTRUMENT FLIGHT RULES.)
(See SPECIAL VFR OPERATIONS.)
(See ICAO term AERODROME BEACON.)
(Refer to AIM.)

AIRPORT SURFACE DETECTION EQUIPMENT (ASDE)− Surveillance equipment specifically designed to detect aircraft, vehicular traffic, and other objects, on the surface of an airport, and to present the image on a tower display. Used to augment visual observation by tower personnel of aircraft and/or vehicular movements on runways and taxiways. There are three ASDE systems deployed in the NAS:

a. ASDE−3− a Surface Movement Radar.

b. ASDE−X− a system that uses an X−band Surface Movement Radar, multilateration, and ADS−B.

c. Airport Surface Surveillance Capability (ASSC)− A system that uses Surface Movement Radar, multilateration, and ADS−B.

AIRPORT SURVEILLANCE RADAR− Approach control radar used to detect and display an aircraft's position in the terminal area. ASR provides range and azimuth information but does not provide elevation data. Coverage of the ASR can extend up to 60 miles.

AIRPORT TAXI CHARTS−
(See AERONAUTICAL CHART.)

AIRPORT TRAFFIC CONTROL SERVICE− A service provided by a control tower for aircraft operating on the movement area and in the vicinity of an airport.

(See MOVEMENT AREA.)
(See TOWER.)
(See ICAO term AERODROME CONTROL SERVICE.)

AIRPORT TRAFFIC CONTROL TOWER−
(See TOWER.)

AIRSPACE CONFLICT− Predicted conflict of an aircraft and active Special Activity Airspace (SAA).

AIRSPACE FLOW PROGRAM (AFP)− AFP is a Traffic Management (TM) process administered by the Air Traffic Control System Command Center (ATCSCC) where aircraft are assigned an Expect Departure Clearance Time (EDCT) in order to manage capacity and demand for a specific area of the National Airspace System (NAS). The purpose of the program is to mitigate the effects of en route constraints. It is a flexible program and may be implemented in various forms depending upon the needs of the air traffic system.

AIRSPACE HIERARCHY− Within the airspace classes, there is a hierarchy and, in the event of an overlap of airspace: Class A preempts Class B, Class B preempts Class C, Class C preempts Class D, Class D preempts Class E, and Class E preempts Class G.

AIRSPEED− The speed of an aircraft relative to its surrounding air mass. The unqualified term "airspeed" means one of the following:

a. Indicated Airspeed− The speed shown on the aircraft airspeed indicator. This is the speed used in pilot/controller communications under the general term "airspeed."

(Refer to 14 CFR Part 1.)

b. True Airspeed− The airspeed of an aircraft relative to undisturbed air. Used primarily in flight planning and en route portion of flight. When used in pilot/controller communications, it is referred to as "true airspeed" and not shortened to "airspeed."

AIRSPACE RESERVATION− The term used in oceanic ATC for airspace utilization under prescribed conditions normally employed for the mass movement of aircraft or other special user requirements which cannot otherwise be accomplished. Airspace reservations must be classified as either "moving" or "stationary."
(See MOVING AIRSPACE RESERVATION)
(See STATIONARY AIRSPACE RESERVATION.)
(See ALTITUDE RESERVATION.)

AIRSTART− The starting of an aircraft engine while the aircraft is airborne, preceded by engine shutdown during training flights or by actual engine failure.

AIRWAY− A Class E airspace area established in the form of a corridor, the centerline of which is defined by radio navigational aids.
(See FEDERAL AIRWAYS.)
(See ICAO term AIRWAY.)
(Refer to 14 CFR Part 71.)
(Refer to AIM.)

AIRWAY [ICAO]− A control area or portion thereof established in the form of corridor equipped with radio navigational aids.

AIRWAY BEACON− Used to mark airway segments in remote mountain areas. The light flashes Morse Code to identify the beacon site.
(Refer to AIM.)

AIS−
(See AERONAUTICAL INFORMATION SERVICES.)

AIT−
(See AUTOMATED INFORMATION TRANSFER.)

ALERFA (Alert Phase) [ICAO]− A situation wherein apprehension exists as to the safety of an aircraft and its occupants.

ALERT− A notification to a position that there is an aircraft-to-aircraft or aircraft-to-airspace conflict, as detected by Automated Problem Detection (APD).

ALERT AREA−
(See SPECIAL USE AIRSPACE.)

ALERT NOTICE (ALNOT)− A request originated by a flight service station (FSS) or an air route traffic control center (ARTCC) for an extensive communication search for overdue, unreported, or missing aircraft.

ALERTING SERVICE− A service provided to notify appropriate organizations regarding aircraft in need of search and rescue aid and assist such organizations as required.

ALNOT−
(See ALERT NOTICE.)

ALONG−TRACK DISTANCE (ATD)− The horizontal distance between the aircraft's current position and a fix measured by an area navigation system that is not subject to slant range errors.

ALPHANUMERIC DISPLAY− Letters and numerals used to show identification, altitude, beacon code, and other information concerning a target on a radar display.

ALTERNATE AERODROME [ICAO]− An aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome of intended landing.

Note: The aerodrome from which a flight departs may also be an en-route or a destination alternate aerodrome for the flight.

ALTERNATE AIRPORT− An airport at which an aircraft may land if a landing at the intended airport becomes inadvisable.
(See ICAO term ALTERNATE AERODROME.)

ALTIMETER SETTING− The barometric pressure reading used to adjust a pressure altimeter for variations in existing atmospheric pressure or to the standard altimeter setting (29.92).

(Refer to 14 CFR Part 91.)
(Refer to AIM.)

ALTITUDE− The height of a level, point, or object measured in feet Above Ground Level (AGL) or from Mean Sea Level (MSL).

(See FLIGHT LEVEL.)

a. MSL Altitude− Altitude expressed in feet measured from mean sea level.

b. AGL Altitude− Altitude expressed in feet measured above ground level.

c. Indicated Altitude− The altitude as shown by an altimeter. On a pressure or barometric altimeter it is altitude as shown uncorrected for instrument error and uncompensated for variation from standard atmospheric conditions.

(See ICAO term ALTITUDE.)

ALTITUDE [ICAO]− The vertical distance of a level, a point or an object considered as a point, measured from mean sea level (MSL).

ALTITUDE READOUT− An aircraft's altitude, transmitted via the Mode C transponder feature, that is visually displayed in 100-foot increments on a radar scope having readout capability.

(See ALPHANUMERIC DISPLAY.)
(Refer to AIM.)

ALTITUDE RESERVATION (ALTRV)− Airspace utilization under prescribed conditions normally employed for the mass movement of aircraft or other special user requirements which cannot otherwise be accomplished. ALTRVs are approved by the appropriate FAA facility. ALTRVs must be classified as either "moving" or "stationary."

(See MOVING ALTITUDE RESERVATION.)
(See STATIONARY ALTITUDE RESERVATION.)
(See AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER.)

ALTITUDE RESTRICTION− An altitude or altitudes, stated in the order flown, which are to be maintained until reaching a specific point or time. Altitude restrictions may be issued by ATC due to traffic, terrain, or other airspace considerations.

ALTITUDE RESTRICTIONS ARE CANCELED− Adherence to previously imposed altitude restrictions is no longer required during a climb or descent.

ALTRV−

(See ALTITUDE RESERVATION.)

AMVER−

(See AUTOMATED MUTUAL-ASSISTANCE VESSEL RESCUE SYSTEM.)

APB−

(See AUTOMATED PROBLEM DETECTION BOUNDARY.)

APD−

(See AUTOMATED PROBLEM DETECTION.)

APDIA−

(See AUTOMATED PROBLEM DETECTION INHIBITED AREA.)

APPROACH CLEARANCE− Authorization by ATC for a pilot to conduct an instrument approach. The type of instrument approach for which a clearance and other pertinent information is provided in the approach clearance when required.

(See CLEARED APPROACH.)
(See INSTRUMENT APPROACH PROCEDURE.)
(Refer to AIM.)
(Refer to 14 CFR Part 91.)

APPROACH CONTROL FACILITY− A terminal ATC facility that provides approach control service in a terminal area.
(See APPROACH CONTROL SERVICE.)
(See RADAR APPROACH CONTROL FACILITY.)

APPROACH CONTROL SERVICE− Air traffic control service provided by an approach control facility for arriving and departing VFR/IFR aircraft and, on occasion, en route aircraft. At some airports not served by an approach control facility, the ARTCC provides limited approach control service.
(See ICAO term APPROACH CONTROL SERVICE.)
(Refer to AIM.)

APPROACH CONTROL SERVICE [ICAO]− Air traffic control service for arriving or departing controlled flights.

APPROACH GATE− An imaginary point used within ATC as a basis for vectoring aircraft to the final approach course. The gate will be established along the final approach course 1 mile from the final approach fix on the side away from the airport and will be no closer than 5 miles from the landing threshold.

APPROACH/DEPARTURE HOLD AREA− The locations on taxiways in the approach or departure areas of a runway designated to protect landing or departing aircraft. These locations are identified by signs and markings.

APPROACH LIGHT SYSTEM−
(See AIRPORT LIGHTING.)

APPROACH SEQUENCE− The order in which aircraft are positioned while on approach or awaiting approach clearance.
(See LANDING SEQUENCE.)
(See ICAO term APPROACH SEQUENCE.)

APPROACH SEQUENCE [ICAO]− The order in which two or more aircraft are cleared to approach to land at the aerodrome.

APPROACH SPEED− The recommended speed contained in aircraft manuals used by pilots when making an approach to landing. This speed will vary for different segments of an approach as well as for aircraft weight and configuration.

APPROACH WITH VERTICAL GUIDANCE (APV)– A term used to describe RNAV approach procedures that provide lateral and vertical guidance but do not meet the requirements to be considered a precision approach.

APPROPRIATE ATS AUTHORITY [ICAO]− The relevant authority designated by the State responsible for providing air traffic services in the airspace concerned. In the United States, the "appropriate ATS authority" is the Program Director for Air Traffic Planning and Procedures, ATP-1.

APPROPRIATE AUTHORITY−

a. Regarding flight over the high seas: the relevant authority is the State of Registry.

b. Regarding flight over other than the high seas: the relevant authority is the State having sovereignty over the territory being overflown.

APPROPRIATE OBSTACLE CLEARANCE MINIMUM ALTITUDE− Any of the following:
(See MINIMUM EN ROUTE IFR ALTITUDE.)
(See MINIMUM IFR ALTITUDE.)
(See MINIMUM OBSTRUCTION CLEARANCE ALTITUDE.)
(See MINIMUM VECTORING ALTITUDE.)

APPROPRIATE TERRAIN CLEARANCE MINIMUM ALTITUDE− Any of the following:
(See MINIMUM EN ROUTE IFR ALTITUDE.)
(See MINIMUM IFR ALTITUDE.)
(See MINIMUM OBSTRUCTION CLEARANCE ALTITUDE.)
(See MINIMUM VECTORING ALTITUDE.)

APRON− A defined area on an airport or heliport intended to accommodate aircraft for purposes of loading or unloading passengers or cargo, refueling, parking, or maintenance. With regard to seaplanes, a ramp is used for access to the apron from the water.

(See ICAO term APRON.)

APRON [ICAO]− A defined area, on a land aerodrome, intended to accommodate aircraft for purposes of loading or unloading passengers, mail or cargo, refueling, parking or maintenance.

ARC− The track over the ground of an aircraft flying at a constant distance from a navigational aid by reference to distance measuring equipment (DME).

AREA CONTROL CENTER [ICAO]− An air traffic control facility primarily responsible for ATC services being provided IFR aircraft during the en route phase of flight. The U.S. equivalent facility is an air route traffic control center (ARTCC).

AREA NAVIGATION (RNAV)− A method of navigation which permits aircraft operation on any desired flight path within the coverage of ground− or space−based navigation aids or within the limits of the capability of self-contained aids, or a combination of these.

Note: Area navigation includes performance−based navigation as well as other operations that do not meet the definition of performance−based navigation.

AREA NAVIGATION (RNAV) APPROACH CONFIGURATION:

a. STANDARD T− An RNAV approach whose design allows direct flight to any one of three initial approach fixes (IAF) and eliminates the need for procedure turns. The standard design is to align the procedure on the extended centerline with the missed approach point (MAP) at the runway threshold, the final approach fix (FAF), and the initial approach/intermediate fix (IAF/IF). The other two IAFs will be established perpendicular to the IF.

b. MODIFIED T− An RNAV approach design for single or multiple runways where terrain or operational constraints do not allow for the standard T. The "T" may be modified by increasing or decreasing the angle from the corner IAF(s) to the IF or by eliminating one or both corner IAFs.

c. STANDARD I− An RNAV approach design for a single runway with both corner IAFs eliminated. Course reversal or radar vectoring may be required at busy terminals with multiple runways.

d. TERMINAL ARRIVAL AREA (TAA)− The TAA is controlled airspace established in conjunction with the Standard or Modified T and I RNAV approach configurations. In the standard TAA, there are three areas: straight-in, left base, and right base. The arc boundaries of the three areas of the TAA are published portions of the approach and allow aircraft to transition from the en route structure direct to the nearest IAF. TAAs will also eliminate or reduce feeder routes, departure extensions, and procedure turns or course reversal.

1. STRAIGHT-IN AREA− A 30 NM arc centered on the IF bounded by a straight line extending through the IF perpendicular to the intermediate course.

2. LEFT BASE AREA− A 30 NM arc centered on the right corner IAF. The area shares a boundary with the straight-in area except that it extends out for 30 NM from the IAF and is bounded on the other side by a line extending from the IF through the FAF to the arc.

3. RIGHT BASE AREA− A 30 NM arc centered on the left corner IAF. The area shares a boundary with the straight-in area except that it extends out for 30 NM from the IAF and is bounded on the other side by a line extending from the IF through the FAF to the arc.

AREA NAVIGATION (RNAV) GLOBAL POSITIONING SYSTEM (GPS) PRECISION RUNWAY MONITORING (PRM) APPROACH−
A GPS approach, which requires vertical guidance, used in lieu of another type of PRM approach to conduct approaches to parallel runways whose extended centerlines are separated by less than 4,300 feet and at least 3,000 feet, where simultaneous close parallel approaches are permitted. Also used in lieu of an ILS PRM and/or LDA PRM approach to conduct Simultaneous Offset Instrument Approach (SOIA) operations.

ARMY AVIATION FLIGHT INFORMATION BULLETIN− A bulletin that provides air operation data covering Army, National Guard, and Army Reserve aviation activities.

ARO−
(See AIRPORT RESERVATION OFFICE.)

ARRESTING SYSTEM− A safety device consisting of two major components, namely, engaging or catching devices and energy absorption devices for the purpose of arresting both tailhook and/or nontailhook-equipped aircraft. It is used to prevent aircraft from overrunning runways when the aircraft cannot be stopped after landing or during aborted takeoff. Arresting systems have various names; e.g., arresting gear, hook device, wire barrier cable.
(See ABORT.)
(Refer to AIM.)

ARRIVAL CENTER− The ARTCC having jurisdiction for the impacted airport.

ARRIVAL DELAY− A parameter which specifies a period of time in which no aircraft will be metered for arrival at the specified airport.

ARRIVAL/DEPARTURE WINDOW (ADW)− A depiction presented on an air traffic control display, used by the controller to prevent possible conflicts between arrivals to, and departures from, a runway. The ADW identifies that point on the final approach course by which a departing aircraft must have begun takeoff.

ARRIVAL SECTOR (En Route)− An operational control sector containing one or more meter fixes on or near the TRACON boundary.

ARRIVAL TIME− The time an aircraft touches down on arrival.

ARSR−
(See AIR ROUTE SURVEILLANCE RADAR.)

ARTCC−
(See AIR ROUTE TRAFFIC CONTROL CENTER.)

ASDA−
(See ACCELERATE-STOP DISTANCE AVAILABLE.)

ASDA [ICAO]−
(See ICAO Term ACCELERATE-STOP DISTANCE AVAILABLE.)

ASDE−
(See AIRPORT SURFACE DETECTION EQUIPMENT.)

ASLAR−
(See AIRCRAFT SURGE LAUNCH AND RECOVERY.)

ASR−
(See AIRPORT SURVEILLANCE RADAR.)

ASR APPROACH−
(See SURVEILLANCE APPROACH.)

ASSOCIATED− A radar target displaying a data block with flight identification and altitude information.
(See UNASSOCIATED.)

ATC−
(See AIR TRAFFIC CONTROL.)

ATC ADVISES− Used to prefix a message of noncontrol information when it is relayed to an aircraft by other than an air traffic controller.
(See ADVISORY.)

ATC ASSIGNED AIRSPACE− Airspace of defined vertical/lateral limits, assigned by ATC, for the purpose of providing air traffic segregation between the specified activities being conducted within the assigned airspace and other IFR air traffic.
(See SPECIAL USE AIRSPACE.)

ATC CLEARANCE−
(See AIR TRAFFIC CLEARANCE.)

ATC CLEARS− Used to prefix an ATC clearance when it is relayed to an aircraft by other than an air traffic controller.

ATC INSTRUCTIONS− Directives issued by air traffic control for the purpose of requiring a pilot to take specific actions; e.g., "Turn left heading two five zero," "Go around," "Clear the runway."
(Refer to 14 CFR Part 91.)

ATC PREFERRED ROUTE NOTIFICATION− EDST notification to the appropriate controller of the need to determine if an ATC preferred route needs to be applied, based on destination airport.
(See ROUTE ACTION NOTIFICATION.)
(See EN ROUTE DECISION SUPPORT TOOL.)

ATC PREFERRED ROUTES− Preferred routes that are not automatically applied by Host.

ATC REQUESTS− Used to prefix an ATC request when it is relayed to an aircraft by other than an air traffic controller.

ATC SECURITY SERVICES− Communications and security tracking provided by an ATC facility in support of the DHS, the DoD, or other Federal security elements in the interest of national security. Such security services are only applicable within designated areas. ATC security services do not include ATC basic radar services or flight following.

ATC SECURITY SERVICES POSITION− The position responsible for providing ATC security services as defined. This position does not provide ATC, IFR separation, or VFR flight following services, but is responsible for providing security services in an area comprising airspace assigned to one or more ATC operating sectors. This position may be combined with control positions.

ATC SECURITY TRACKING− The continuous tracking of aircraft movement by an ATC facility in support of the DHS, the DoD, or other security elements for national security using radar (i.e., radar tracking) or other means (e.g., manual tracking) without providing basic radar services (including traffic advisories) or other ATC services not defined in this section.

ATS SURVEILLANCE SERVICE [ICAO]– A term used to indicate a service provided directly by means of an ATS surveillance system.

ATC SURVEILLANCE SOURCE– Used by ATC for establishing identification, control and separation using a target depicted on an air traffic control facility's video display that has met the relevant safety standards for operational use and received from one, or a combination, of the following surveillance sources:

a. Radar (See RADAR.)

b. ADS-B (See AUTOMATIC DEPENDENT SURVEILLANCE−BROADCAST.)

c. WAM (See WIDE AREA MULTILATERATION.)

(See INTERROGATOR.)
(See TRANSPONDER.)
(See ICAO term RADAR.)
(Refer to AIM.)

ATS SURVEILLANCE SYSTEM [ICAO]– A generic term meaning variously, ADS−B, PSR, SSR or any comparable ground−based system that enables the identification of aircraft.

Note: A comparable ground−based system is one that has been demonstrated, by comparative assessment or other methodology, to have a level of safety and performance equal to or better than monopulse SSR.

ATCAA−
(See ATC ASSIGNED AIRSPACE.)

ATCRBS−
(See RADAR.)

ATCSCC−
(See AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER.)

ATCT−
(See TOWER.)

ATD−
(See ALONG−TRACK DISTANCE.)

ATIS−
(See AUTOMATIC TERMINAL INFORMATION SERVICE.)

ATIS [ICAO]−
(See ICAO Term AUTOMATIC TERMINAL INFORMATION SERVICE.)

ATO−
(See AIR TRAFFIC ORGANIZATION.)

ATPA−
(See AUTOMATED TERMINAL PROXIMITY ALERT.)

ATS ROUTE [ICAO]− A specified route designed for channeling the flow of traffic as necessary for the provision of air traffic services.

Note: The term "ATS Route" is used to mean variously, airway, advisory route, controlled or uncontrolled route, arrival or departure, etc.

ATTENTION ALL USERS PAGE (AAUP)- The AAUP provides the pilot with additional information relative to conducting a specific operation, for example, PRM approaches and RNAV departures.

AUTOLAND APPROACH−An autoland system aids by providing control of aircraft systems during a precision instrument approach to at least decision altitude and possibly all the way to touchdown, as well as in some cases, through the landing rollout. The autoland system is a sub-system of the autopilot system from which control surface management occurs. The aircraft autopilot sends instructions to the autoland system and monitors the autoland system performance and integrity during its execution.

AUTOMATED EMERGENCY DESCENT−
(See EMERGENCY DESCENT MODE.)

AUTOMATED INFORMATION TRANSFER (AIT)− A precoordinated process, specifically defined in facility directives, during which a transfer of altitude control and/or radar identification is accomplished without verbal coordination between controllers using information communicated in a full data block.

AUTOMATED MUTUAL-ASSISTANCE VESSEL RESCUE SYSTEM− A facility which can deliver, in a matter of minutes, a surface picture (SURPIC) of vessels in the area of a potential or actual search and rescue incident, including their predicted positions and their characteristics.
(See FAA Order JO 7110.65, Para 10−6−4, INFLIGHT CONTINGENCIES.)

AUTOMATED PROBLEM DETECTION (APD)− An Automation Processing capability that compares trajectories in order to predict conflicts.

AUTOMATED PROBLEM DETECTION BOUNDARY (APB)− The adapted distance beyond a facilities boundary defining the airspace within which EDST performs conflict detection.
(See EN ROUTE DECISION SUPPORT TOOL.)

AUTOMATED PROBLEM DETECTION INHIBITED AREA (APDIA)− Airspace surrounding a terminal area within which APD is inhibited for all flights within that airspace.

AUTOMATED SERVICES–Services delivered via an automated system (that is, without human interaction). For example, flight plans, Notices to Air Missions (NOTAM), interactive maps, computer−generated text−to−speech messages, short message service, or email.

AUTOMATED TERMINAL PROXIMITY ALERT (ATPA)− Monitors the separation of aircraft on the Final Approach Course (FAC), displaying a graphical notification (cone and/or mileage) when a potential loss of separation is detected. The warning cone (Yellow) will display at 45 seconds and the alert cone (Red) will display at 24 seconds prior to predicted loss of separation. Current distance between two aircraft on final will be displayed in line 3 of the full data block of the trailing aircraft in corresponding colors.

AUTOMATED WEATHER SYSTEM− Any of the automated weather sensor platforms that collect weather data at airports and disseminate the weather information via radio and/or landline. The systems currently consist of the Automated Surface Observing System (ASOS) and Automated Weather Observation System (AWOS).

AUTOMATED UNICOM− Provides completely automated weather, radio check capability and airport advisory information on an Automated UNICOM system. These systems offer a variety of features, typically selectable by microphone clicks, on the UNICOM frequency. Availability will be published in the Chart Supplement and approach charts.

AUTOMATIC ALTITUDE REPORT−
(See ALTITUDE READOUT.)

AUTOMATIC ALTITUDE REPORTING− That function of a transponder which responds to Mode C interrogations by transmitting the aircraft's altitude in 100-foot increments.

AUTOMATIC CARRIER LANDING SYSTEM− U.S. Navy final approach equipment consisting of precision tracking radar coupled to a computer data link to provide continuous information to the aircraft, monitoring capability to the pilot, and a backup approach system.

AUTOMATIC DEPENDENT SURVEILLANCE (ADS) [ICAO]− A surveillance technique in which aircraft automatically provide, via a data link, data derived from on−board navigation and position fixing systems, including aircraft identification, four dimensional position and additional data as appropriate.

AUTOMATIC DEPENDENT SURVEILLANCE−BROADCAST (ADS-B)− A surveillance system in which an aircraft or vehicle to be detected is fitted with cooperative equipment in the form of a data link transmitter. The aircraft or vehicle periodically broadcasts its GNSS−derived position and other required information such as identity and velocity, which is then received by a ground−based or space−based receiver for processing and display at an air traffic control facility, as well as by suitably equipped aircraft.
(See AUTOMATIC DEPENDENT SURVEILLANCE−BROADCAST IN.)
(See AUTOMATIC DEPENDENT SURVEILLANCE−BROADCAST OUT.)
(See COOPERATIVE SURVEILLANCE.)
(See GLOBAL POSITIONING SYSTEM.)
(See SPACE−BASED ADS−B.)

AUTOMATIC DEPENDENT SURVEILLANCE−BROADCAST IN (ADS−B In)− Aircraft avionics capable of receiving ADS−B Out transmissions directly from other aircraft, as well as traffic or weather information transmitted from ground stations.
(See AUTOMATIC DEPENDENT SURVEILLANCE−BROADCAST OUT.)
(See AUTOMATIC DEPENDENT SURVEILLANCE−REBROADCAST.)
(See FLIGHT INFORMATION SERVICE−BROADCAST.)
(See TRAFFIC INFORMATION SERVICE−BROADCAST.)

AUTOMATIC DEPENDENT SURVEILLANCE−BROADCAST OUT (ADS−B Out)− The transmitter onboard an aircraft or ground vehicle that periodically broadcasts its GNSS−derived position along with other required information, such as identity, altitude, and velocity.
(See AUTOMATIC DEPENDENT SURVEILLANCE−BROADCAST.)
(See AUTOMATIC DEPENDENT SURVEILLANCE−BROADCAST IN.)

AUTOMATIC DEPENDENT SURVEILLANCE−CONTRACT (ADS−C)− A data link position reporting system, controlled by a ground station, that establishes contracts with an aircraft's avionics that occur automatically whenever specific events occur, or specific time intervals are reached.

AUTOMATIC DEPENDENT SURVEILLANCE- REBROADCAST (ADS-R)− A datalink translation function of the ADS−B ground system required to accommodate the two separate operating frequencies (978 MHz and 1090 MHz). The ADS−B system receives the ADS−B messages transmitted on one frequency and ADS−R translates and reformats the information for rebroadcast and use on the other frequency. This allows ADS−B In equipped aircraft to see nearby ADS−B Out traffic regardless of the operating link of the other aircraft. Aircraft operating on the same ADS−B frequency exchange information directly and do not require the ADS−R translation function.

AUTOMATIC DIRECTION FINDER− An aircraft radio navigation system which senses and indicates the direction to a L/MF nondirectional radio beacon (NDB) ground transmitter. Direction is indicated to the pilot as a magnetic bearing or as a relative bearing to the longitudinal axis of the aircraft depending on the type of indicator installed in the aircraft. In certain applications, such as military, ADF operations may be based on airborne and ground transmitters in the VHF/UHF frequency spectrum.

(See BEARING.)
(See NONDIRECTIONAL BEACON.)

AUTOMATIC FLIGHT INFORMATION SERVICE (AFIS) − ALASKA FSSs ONLY− The continuous broadcast of recorded non−control information at airports in Alaska where a FSS provides local airport advisory service. The AFIS broadcast automates the repetitive transmission of essential but routine information such as weather, wind, altimeter, favored runway, braking action, airport NOTAMs, and other applicable information. The information is continuously broadcast over a discrete VHF radio frequency (usually the ASOS/AWOS frequency).

AUTOMATIC TERMINAL INFORMATION SERVICE− The continuous broadcast of recorded noncontrol information in selected terminal areas. Its purpose is to improve controller effectiveness and to relieve frequency congestion by automating the repetitive transmission of essential but routine information; e.g., “Los Angeles information Alfa. One three zero zero Coordinated Universal Time. Weather, measured ceiling two thousand overcast, visibility three, haze, smoke, temperature seven one, dew point five seven, wind two five zero at five, altimeter two niner niner six. I-L-S Runway Two Five Left approach in use, Runway Two Five Right closed, advise you have Alfa.”

(See ICAO term AUTOMATIC TERMINAL INFORMATION SERVICE.)
(Refer to AIM.)

AUTOMATIC TERMINAL INFORMATION SERVICE [ICAO]− The provision of current, routine information to arriving and departing aircraft by means of continuous and repetitive broadcasts throughout the day or a specified portion of the day.

AUTOROTATION− A rotorcraft flight condition in which the lifting rotor is driven entirely by action of the air when the rotorcraft is in motion.

a. Autorotative Landing/Touchdown Autorotation. Used by a pilot to indicate that the landing will be made without applying power to the rotor.

b. Low Level Autorotation. Commences at an altitude well below the traffic pattern, usually below 100 feet AGL and is used primarily for tactical military training.

c. 180 degrees Autorotation. Initiated from a downwind heading and is commenced well inside the normal traffic pattern. “Go around” may not be possible during the latter part of this maneuver.

AVAILABLE LANDING DISTANCE (ALD)− The portion of a runway available for landing and roll-out for aircraft cleared for LAHSO. This distance is measured from the landing threshold to the hold-short point.

AVIATION WATCH NOTIFICATION MESSAGE− The Storm Prediction Center (SPC) issues Aviation Watch Notification Messages (SAW) to provide an area threat alert for the aviation meteorology community to forecast organized severe thunderstorms that may produce tornadoes, large hail, and/or convective damaging winds as indicated in Public Watch Notification Messages within the Continental U.S. A SAW message provides a description of the type of watch issued by SPC, a valid time, an approximation of the area in a watch, and primary hazard(s).

AVIATION WEATHER SERVICE− A service provided by the National Weather Service (NWS) and FAA which collects and disseminates pertinent weather information for pilots, aircraft operators, and ATC. Available aviation weather reports and forecasts are displayed at each NWS office and FAA FSS.

(See TRANSCRIBED WEATHER BROADCAST.)
(See WEATHER ADVISORY.)
(Refer to AIM.)

B

B4UFLY− A free downloadable application, which allows operators to check airspace and local advisories before flying.

BACK-TAXI− A term used by air traffic controllers to taxi an aircraft on the runway opposite to the traffic flow. The aircraft may be instructed to back-taxi to the beginning of the runway or at some point before reaching the runway end for the purpose of departure or to exit the runway.

BASE LEG−
(See TRAFFIC PATTERN.)

BEACON−
(See AERONAUTICAL BEACON.)
(See AIRPORT ROTATING BEACON.)
(See AIRWAY BEACON.)
(See MARKER BEACON.)
(See NONDIRECTIONAL BEACON.)
(See RADAR.)

BEARING− The horizontal direction to or from any point, usually measured clockwise from true north, magnetic north, or some other reference point through 360 degrees.
(See NONDIRECTIONAL BEACON.)

BELOW MINIMUMS− Weather conditions below the minimums prescribed by regulation for the particular action involved; e.g., landing minimums, takeoff minimums.

BEYOND VISUAL LINE OF SIGHT (BVLOS)− The operation of a UAS beyond the visual capability of the flight crew members (i.e., remote pilot in command [RPIC], the person manipulating the controls, and visual observer [VO]), if used to see the aircraft with vision unaided by any device other than corrective lenses, spectacles, and contact lenses.

BLAST FENCE− A barrier that is used to divert or dissipate jet or propeller blast.

BLAST PAD− A surface adjacent to the ends of a runway provided to reduce the erosive effect of jet blast and propeller wash.

BLIND SPEED− The rate of departure or closing of a target relative to the radar antenna at which cancellation of the primary radar target by moving target indicator (MTI) circuits in the radar equipment causes a reduction or complete loss of signal.
(See ICAO term BLIND VELOCITY.)

BLIND SPOT− An area from which radio transmissions and/or radar echoes cannot be received. The term is also used to describe portions of the airport not visible from the control tower.

BLIND TRANSMISSION−
(See TRANSMITTING IN THE BLIND.)

BLIND VELOCITY [ICAO]− The radial velocity of a moving target such that the target is not seen on primary radars fitted with certain forms of fixed echo suppression.

BLIND ZONE−
(See BLIND SPOT.)

BLOCKED− Phraseology used to indicate that a radio transmission has been distorted or interrupted due to multiple simultaneous radio transmissions.

BOTTOM ALTITUDE− In reference to published altitude restrictions on a STAR or STAR runway transition, the lowest altitude authorized.

BOUNDARY LIGHTS−
(See AIRPORT LIGHTING.)

BRAKING ACTION (GOOD, GOOD TO MEDIUM, MEDIUM, MEDIUM TO POOR, POOR, OR NIL)− A report of conditions on the airport movement area providing a pilot with a degree/quality of braking to expect. Braking action is reported in terms of good, good to medium, medium, medium to poor, poor, or nil.
(See RUNWAY CONDITION READING.)
(See RUNWAY CONDITION REPORT.)
(See RUNWAY CONDITION CODES.)

BRAKING ACTION ADVISORIES− When tower controllers receive runway braking action reports which include the terms "medium," "poor," or "nil," or whenever weather conditions are conducive to deteriorating or rapidly changing runway braking conditions, the tower will include on the ATIS broadcast the statement, "Braking Action Advisories are in Effect." During the time braking action advisories are in effect, ATC will issue the most current braking action report for the runway in use to each arriving and departing aircraft. Pilots should be prepared for deteriorating braking conditions and should request current runway condition information if not issued by controllers. Pilots should also be prepared to provide a descriptive runway condition report to controllers after landing.

BREAKOUT− A technique to direct aircraft out of the approach stream. In the context of simultaneous (independent) parallel operations, a breakout is used to direct threatened aircraft away from a deviating aircraft.

BROADCAST− Transmission of information for which an acknowledgement is not expected.
(See ICAO term BROADCAST.)

BROADCAST [ICAO]− A transmission of information relating to air navigation that is not addressed to a specific station or stations.

BUFFER AREA− As applied to an MVA or MIA chart, a depicted 3 NM or 5 NM radius MVA/MIA sector isolating a displayed obstacle for which the sector is established. A portion of a buffer area can also be inclusive of a MVA/MIA sector polygon boundary.

BVLOS−
(See BEYOND VISUAL LINE OF SIGHT.)

C

CALCULATED LANDING TIME− A term that may be used in place of tentative or actual calculated landing time, whichever applies.

CALIBRATED AIRSPEED (CAS) − The indicated airspeed of an aircraft, corrected for position and instrument error. Calibrated airspeed is equal to true airspeed in standard atmosphere at sea level.

CALL FOR RELEASE− Wherein the overlying ARTCC requires a terminal facility to initiate verbal coordination to secure ARTCC approval for release of a departure into the en route environment.

CALL UP− Initial voice contact between a facility and an aircraft, using the identification of the unit being called and the unit initiating the call.
(Refer to AIM.)

CANADIAN MINIMUM NAVIGATION PERFORMANCE SPECIFICATION AIRSPACE− That portion of Canadian domestic airspace within which MNPS separation may be applied.

CARDINAL ALTITUDES− “Odd” or “Even” thousand-foot altitudes or flight levels; e.g., 5,000, 6,000, 7,000, FL 250, FL 260, FL 270.
(See ALTITUDE.)
(See FLIGHT LEVEL.)

CARDINAL FLIGHT LEVELS−
(See CARDINAL ALTITUDES.)

CAT−
(See CLEAR-AIR TURBULENCE.)

CATCH POINT− A fix/waypoint that serves as a transition point from the high altitude waypoint navigation structure to an arrival procedure (STAR) or the low altitude ground−based navigation structure.

CBO−
(See COMMUNITY−BASED ORGANIZATION.)

CEILING− The heights above the earth’s surface of the lowest layer of clouds or obscuring phenomena that is reported as “broken,” “overcast,” or “obscuration,” and not classified as “thin” or “partial.”
(See ICAO term CEILING.)

CEILING [ICAO]− The height above the ground or water of the base of the lowest layer of cloud below 6,000 meters (20,000 feet) covering more than half the sky.

CENTER−
(See AIR ROUTE TRAFFIC CONTROL CENTER.)

CENTER’S AREA− The specified airspace within which an air route traffic control center (ARTCC) provides air traffic control and advisory service.
(See AIR ROUTE TRAFFIC CONTROL CENTER.)
(Refer to AIM.)

CENTER WEATHER ADVISORY− An unscheduled weather advisory issued by Center Weather Service Unit meteorologists for ATC use to alert pilots of existing or anticipated adverse weather conditions within the next 2 hours. A CWA may modify or redefine a SIGMET.
(See AIRMET.)
(See CONVECTIVE SIGMET.)
(See GRAPHICAL AIRMEN’S METEOROLOGICAL INFORMATION.)
(See SAW.)
(See SIGMET.)
(Refer to AIM.)

CENTRAL EAST PACIFIC− An organized route system between the U.S. West Coast and Hawaii.

CEP−
(See CENTRAL EAST PACIFIC.)

CERAP−
(See COMBINED CENTER-RAPCON.)

CERTIFICATE OF WAIVER OR AUTHORIZATION (COA)− An FAA grant of approval for a specific flight operation or airspace authorization or waiver.

CERTIFIED TOWER RADAR DISPLAY (CTRD)− An FAA radar display certified for use in the NAS.

CFR−
(See CALL FOR RELEASE.)

CHA
(See CONTINGENCY HAZARD AREA)

CHAFF− Thin, narrow metallic reflectors of various lengths and frequency responses, used to reflect radar energy. These reflectors, when dropped from aircraft and allowed to drift downward, result in large targets on the radar display.

CHART SUPPLEMENT− A series of civil/military flight information publications issued by FAA every 56 days consisting of the Chart Supplement U.S., Chart Supplement Alaska, and Chart Supplement Pacific.

CHART SUPPLEMENT ALASKA− A flight information publication designed for use with appropriate IFR or VFR charts which contains data on all airports, seaplane bases, and heliports open to the public including communications data, navigational facilities, airport diagrams, certain special notices, and non−regulatory procedures. Also included in this publication are selected entries needed to support the unique geographical operational conditions of Alaska. This publication is issued in one volume for the state of Alaska.

CHART SUPPLEMENT PACIFIC− A flight information publication designed for use with appropriate IFR or VFR charts which contains data on all airports, seaplane bases, and heliports open to the public including communications data, navigational facilities, airport diagrams, certain special notices, and non−regulatory procedures. Also included in this publication are Instrument Approach Procedures (IAP), Departure Procedures (DP), and Standard Terminal Arrival (STAR) charts, along with selected entries needed to support the unique geographical operational conditions of the Pacific Oceanic region. This publication is issued in one volume for the Hawaiian Islands and other selected Pacific Islands.

CHART SUPPLEMENT U.S.− A flight information publication designed for use with appropriate IFR or VFR charts which contains data on all airports, seaplane bases, and heliports open to the public including communications data, navigational facilities, airport diagrams, certain special notices, and non−regulatory procedures. This publication is issued for the conterminous U.S., Puerto Rico, and the Virgin Islands in seven volumes according to geographical area.

CHARTED VFR FLYWAYS− Charted VFR Flyways are flight paths recommended for use to bypass areas heavily traversed by large turbine-powered aircraft. Pilot compliance with recommended flyways and associated altitudes is strictly voluntary. VFR Flyway Planning charts are published on the back of existing VFR Terminal Area charts.

CHARTED VISUAL FLIGHT PROCEDURE APPROACH− An approach conducted while operating on an instrument flight rules (IFR) flight plan which authorizes the pilot of an aircraft to proceed visually and clear of clouds to the airport via visual landmarks and other information depicted on a charted visual flight procedure. This approach must be authorized and under the control of the appropriate air traffic control facility. Weather minimums required are depicted on the chart.

CHASE− An aircraft flown in proximity to another aircraft normally to observe its performance during training or testing.

CHASE AIRCRAFT−
(See CHASE.)

CHOP− A form of turbulence.

a. Light Chop– Turbulence that causes slight, rapid and somewhat rhythmic bumpiness without appreciable changes in altitude or attitude.

b. Moderate Chop– Turbulence similar to Light Chop but of greater intensity. It causes rapid bumps or jolts without appreciable changes in aircraft altitude or attitude.
(See TURBULENCE.)

CIRCLE-TO-LAND MANEUVER− A maneuver initiated by the pilot to align the aircraft with a runway for landing when a straight-in landing from an instrument approach is not possible or is not desirable. At tower controlled airports, this maneuver is made only after ATC authorization has been obtained and the pilot has established required visual reference to the airport.
(See CIRCLE TO RUNWAY.)
(See LANDING MINIMUMS.)
(Refer to AIM.)

***CIRCLE TO RUNWAY (RUNWAY NUMBER)*−** Used by ATC to inform the pilot that he/she must circle to land because the runway in use is other than the runway aligned with the instrument approach procedure. When the direction of the circling maneuver in relation to the airport/runway is required, the controller will state the direction (eight cardinal compass points) and specify a left or right downwind or base leg as appropriate; e.g., "Cleared VOR Runway Three Six Approach circle to Runway Two Two," or "Circle northwest of the airport for a right downwind to Runway Two Two."
(See CIRCLE-TO-LAND MANEUVER.)
(See LANDING MINIMUMS.)
(Refer to AIM.)

CIRCLING APPROACH−
(See CIRCLE-TO-LAND MANEUVER.)

CIRCLING MANEUVER−
(See CIRCLE-TO-LAND MANEUVER.)

CIRCLING MINIMA−
(See CONTROLLED AIRSPACE.)

CIVIL AIRCRAFT OPERATION (CAO)− Aircraft operations other than public use.

CLASS A AIRSPACE−
(See CONTROLLED AIRSPACE.)

CLASS B AIRSPACE−
(See CONTROLLED AIRSPACE.)

CLASS C AIRSPACE−
(See CONTROLLED AIRSPACE.)

CLASS D AIRSPACE−
(See CONTROLLED AIRSPACE.)

CLASS E AIRSPACE−
(See CONTROLLED AIRSPACE.)

CLASS G AIRSPACE− Airspace that is not designated in 14 CFR Part 71 as Class A, Class B, Class C, Class D, or Class E controlled airspace is Class G (uncontrolled) airspace.
(See UNCONTROLLED AIRSPACE.)

CLEAR AIR TURBULENCE (CAT)− Turbulence encountered in air where no clouds are present. This term is commonly applied to high-level turbulence associated with wind shear. CAT is often encountered in the vicinity of the jet stream.
(See WIND SHEAR.)
(See JET STREAM.)

CLEAR OF THE RUNWAY−

a. Taxiing aircraft, which is approaching a runway, is clear of the runway when all parts of the aircraft are held short of the applicable runway holding position marking.

b. A pilot or controller may consider an aircraft, which is exiting or crossing a runway, to be clear of the runway when all parts of the aircraft are beyond the runway edge and there are no restrictions to its continued movement beyond the applicable runway holding position marking.

c. Pilots and controllers shall exercise good judgment to ensure that adequate separation exists between all aircraft on runways and taxiways at airports with inadequate runway edge lines or holding position markings.

CLEARANCE−
(See AIR TRAFFIC CLEARANCE.)

CLEARANCE LIMIT− The fix, point, or location to which an aircraft is cleared when issued an air traffic clearance.
(See ICAO term CLEARANCE LIMIT.)

CLEARANCE LIMIT [ICAO]− The point to which an aircraft is granted an air traffic control clearance.

CLEARANCE VOID IF NOT OFF BY (TIME)− Used by ATC to advise an aircraft that the departure release is automatically canceled if takeoff is not made prior to a specified time. The expiration of a clearance void time does not cancel the departure clearance or IFR flight plan. It withdraws the pilot's authority to depart IFR until a new departure release/release time has been issued by ATC. Pilots who choose to depart VFR after their clearance void time has expired should not depart using the previously assigned IFR transponder code.
(See ICAO term CLEARANCE VOID TIME.)

CLEARANCE VOID TIME [ICAO]− A time specified by an air traffic control unit at which a clearance ceases to be valid unless the aircraft concerned has already taken action to comply therewith.

CLEARED APPROACH− ATC authorization for an aircraft to execute any standard or special instrument approach procedure for that airport. Normally, an aircraft will be cleared for a specific instrument approach procedure.
(See CLEARED (Type of) APPROACH.)
(See INSTRUMENT APPROACH PROCEDURE.)
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

CLEARED (Type of) APPROACH− ATC authorization for an aircraft to execute a specific instrument approach procedure to an airport; e.g., "Cleared ILS Runway Three Six Approach."
(See APPROACH CLEARANCE.)
(See INSTRUMENT APPROACH PROCEDURE.)
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

CLEARED AS FILED− Means the aircraft is cleared to proceed in accordance with the route of flight filed in the flight plan. This clearance does not include the altitude, DP, or DP Transition.
(See REQUEST FULL ROUTE CLEARANCE.)
(Refer to AIM.)

CLEARED FOR TAKEOFF− ATC authorization for an aircraft to depart. It is predicated on known traffic and known physical airport conditions.

CLEARED FOR THE OPTION– ATC authorization for an aircraft to make a touch-and-go, low approach, missed approach, stop and go, or full stop landing at the discretion of the pilot. It is normally used in training so that an instructor can evaluate a student's performance under changing situations. Pilots should advise ATC if they decide to remain on the runway, of any delay in their stop and go, delay clearing the runway, or are unable to comply with the instruction(s).

(See OPTION APPROACH.)

(Refer to AIM.)

CLEARED THROUGH– ATC authorization for an aircraft to make intermediate stops at specified airports without refiling a flight plan while en route to the clearance limit.

CLEARED TO LAND– ATC authorization for an aircraft to land. It is predicated on known traffic and known physical airport conditions.

CLEARWAY– An area beyond the takeoff runway under the control of airport authorities within which terrain or fixed obstacles may not extend above specified limits. These areas may be required for certain turbine-powered operations and the size and upward slope of the clearway will differ depending on when the aircraft was certificated.

(Refer to 14 CFR Part 1.)

CLIMB TO VFR– ATC authorization for an aircraft to climb to VFR conditions within Class B, C, D, and E surface areas when the only weather limitation is restricted visibility. The aircraft must remain clear of clouds while climbing to VFR.

(See SPECIAL VFR CONDITIONS.)

(Refer to AIM.)

CLIMBOUT– That portion of flight operation between takeoff and the initial cruising altitude.

CLIMB VIA– An abbreviated ATC clearance that requires compliance with the procedure lateral path, associated speed restrictions, and altitude restrictions along the cleared route or procedure.

CLOSE PARALLEL RUNWAYS– Two parallel runways whose extended centerlines are separated by less than 4,300 feet and at least 3000 feet (750 feet for SOIA operations) for which ATC is authorized to conduct simultaneous independent approach operations. PRM and simultaneous close parallel appear in approach title. Dual communications, special pilot training, an Attention All Users Page (AAUP), NTZ monitoring by displays that have aural and visual alerting algorithms are required. A high update rate surveillance sensor is required for certain runway or approach course spacing.

CLOSED LOOP CLEARANCE– A vector or reroute clearance that includes a return to route point and updates ERAM to accurately reflect the anticipated route (e.g., a QU route pick that anticipates length of vector and includes the next fix that ties into the route of flight.)

CLOSED RUNWAY– A runway that is unusable for aircraft operations. Only the airport management/military operations office can close a runway.

CLOSED TRAFFIC– Successive operations involving takeoffs and landings or low approaches where the aircraft does not exit the traffic pattern.

CLOUD– A cloud is a visible accumulation of minute water droplets and/or ice particles in the atmosphere above the Earth's surface. Cloud differs from ground fog, fog, or ice fog only in that the latter are, by definition, in contact with the Earth's surface.

CLT–

(See CALCULATED LANDING TIME.)

CLUTTER− In radar operations, clutter refers to the reception and visual display of radar returns caused by precipitation, chaff, terrain, numerous aircraft targets, or other phenomena. Such returns may limit or preclude ATC from providing services based on radar.
(See CHAFF.)
(See GROUND CLUTTER.)
(See PRECIPITATION.)
(See TARGET.)
(See ICAO term RADAR CLUTTER.)

CMNPS−
(See CANADIAN MINIMUM NAVIGATION PERFORMANCE SPECIFICATION AIRSPACE.)

COA−
(See CERTIFICATE OF WAIVER OR AUTHORIZATION.)

COASTAL FIX− A navigation aid or intersection where an aircraft transitions between the domestic route structure and the oceanic route structure.

CODES− The number assigned to a particular multiple pulse reply signal transmitted by a transponder.
(See DISCRETE CODE.)

COLD TEMPERATURE CORRECTION− A correction in feet, based on height above airport and temperature, that is added to the aircraft's indicated altitude to offset the effect of cold temperature on true altitude.

COLLABORATIVE TRAJECTORY OPTIONS PROGRAM (CTOP)− CTOP is a traffic management program administered by the Air Traffic Control System Command Center (ATCSCC) that manages demand through constrained airspace, while considering operator preference with regard to both route and delay as defined in a Trajectory Options Set (TOS).

COMBINED CENTER-RAPCON− An air traffic facility which combines the functions of an ARTCC and a radar approach control facility.
(See AIR ROUTE TRAFFIC CONTROL CENTER.)
(See RADAR APPROACH CONTROL FACILITY.)

COMMON POINT− A significant point over which two or more aircraft will report passing or have reported passing before proceeding on the same or diverging tracks. To establish/maintain longitudinal separation, a controller may determine a common point not originally in the aircraft's flight plan and then clear the aircraft to fly over the point.
(See SIGNIFICANT POINT.)

COMMON PORTION−
(See COMMON ROUTE.)

COMMON ROUTE− That segment of a North American Route between the inland navigation facility and the coastal fix.

OR

COMMON ROUTE−
(See SEGMENTS OF A SID/STAR)

COMMON TRAFFIC ADVISORY FREQUENCY (CTAF)− A frequency designed for the purpose of carrying out airport advisory practices while operating to or from an airport without an operating control tower. The CTAF may be a UNICOM, Multicom, FSS, or tower frequency and is identified in appropriate aeronautical publications.
(See DESIGNATED COMMON TRAFFIC ADVISORY FREQUENCY (CTAF) AREA.)
(Refer to AC 90-66, Non−Towered Airport Flight Operations.)

COMMUNITY−BASED ORGANIZATION (CBO)− A membership−based entity, described under Section 501(a,c), whose mission is the furtherance of model aviation. (see also, 49 United States Code (USC) §44809 (h) and Advisory Circular (AC) 91−57).

COMPASS LOCATOR− A low power, low or medium frequency (L/MF) radio beacon installed at the site of the outer or middle marker of an instrument landing system (ILS). It can be used for navigation at distances of approximately 15 miles or as authorized in the approach procedure.

a. Outer Compass Locator (LOM)− A compass locator installed at the site of the outer marker of an instrument landing system.

(See OUTER MARKER.)

b. Middle Compass Locator (LMM)− A compass locator installed at the site of the middle marker of an instrument landing system.

(See MIDDLE MARKER.)
(See ICAO term LOCATOR.)

COMPASS ROSE− A circle, graduated in degrees, printed on some charts or marked on the ground at an airport. It is used as a reference to either true or magnetic direction.

COMPLY WITH RESTRICTIONS− An ATC instruction that requires an aircraft being vectored back onto an arrival or departure procedure to comply with all altitude and/or speed restrictions depicted on the procedure. This term may be used in lieu of repeating each remaining restriction that appears on the procedure.

COMPOSITE FLIGHT PLAN− A flight plan which specifies VFR operation for one portion of flight and IFR for another portion. It is used primarily in military operations.

(Refer to AIM.)

COMPULSORY REPORTING POINTS− Reporting points which must be reported to ATC. They are designated on aeronautical charts by solid triangles or filed in a flight plan as fixes selected to define direct routes. These points are geographical locations which are defined by navigation aids/fixes. Pilots should discontinue position reporting over compulsory reporting points when informed by ATC that their aircraft is in "radar contact."

COMPUTER NAVIGATION FIX (CNF)− A Computer Navigation Fix is a point defined by a latitude/longitude coordinate and is required to support Performance−Based Navigation (PBN) operations. A five−letter identifier denoting a CNF can be found next to an "x" on en route charts and on some approach charts. Eventually, all CNFs will be labeled and begin with the letters "CF" followed by three consonants (e.g., 'CFWBG'). CNFs are not recognized by ATC, are not contained in ATC fix or automation databases, and are not used for ATC purposes. Pilots should not use CNFs for point−to−point navigation (e.g., proceed direct), filing a flight plan, or in aircraft/ATC communications. Use of CNFs has not been adopted or recognized by the International Civil Aviation Organization (ICAO).

(REFER to AIM 1−1−17b5(i)(2), Global Positioning System (GPS).

CONDITIONS NOT MONITORED− When an airport operator cannot monitor the condition of the movement area or airfield surface area, this information is issued as a NOTAM. Usually necessitated due to staffing, operating hours or other mitigating factors associated with airport operations.

CONFIDENCE MANEUVER− A confidence maneuver consists of one or more turns, a climb or descent, or other maneuver to determine if the pilot in command (PIC) is able to receive and comply with ATC instructions.

CONFLICT ALERT− A function of certain air traffic control automated systems designed to alert radar controllers to existing or pending situations between tracked targets (known IFR or VFR aircraft) that require his/her immediate attention/action.

(See MODE C INTRUDER ALERT.)

CONFLICT RESOLUTION− The resolution of potential 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.

CONSOLIDATED WAKE TURBULENCE (CWT)− A version of RECAT that has nine categories, A through I, that refines the grouping of aircraft while optimizing wake turbulence separation.

CONSTRAINT SATISFACTION POINT (CSP)− Meter Reference Elements (MREs) that are actively scheduled by TBFM. Constraint satisfaction occurs when the Scheduled Time of Arrival generated for each metered flight conforms to all the scheduling constraints specified at all the applicable CSPs.

CONTACT−

a. Establish communication with (followed by the name of the facility and, if appropriate, the frequency to be used).

b. A flight condition wherein the pilot ascertains the attitude of his/her aircraft and navigates by visual reference to the surface.

(See CONTACT APPROACH.)
(See RADAR CONTACT.)

CONTACT APPROACH− An approach wherein an aircraft on an IFR flight plan, having an air traffic control authorization, operating clear of clouds with at least 1 mile flight visibility and a reasonable expectation of continuing to the destination airport in those conditions, may deviate from the instrument approach procedure and proceed to the destination airport by visual reference to the surface. This approach will only be authorized when requested by the pilot and the reported ground visibility at the destination airport is at least 1 statute mile.

(Refer to AIM.)

CONTAMINATED RUNWAY− A runway is considered contaminated whenever standing water, ice, snow, slush, frost in any form, heavy rubber, or other substances are present. A runway is contaminated with respect to rubber deposits or other friction-degrading substances when the average friction value for any 500-foot segment of the runway within the ALD fails below the recommended minimum friction level and the average friction value in the adjacent 500-foot segments falls below the maintenance planning friction level.

CONTERMINOUS U.S.− The 48 adjoining States and the District of Columbia.

CONTINENTAL UNITED STATES− The 49 States located on the continent of North America and the District of Columbia.

CONTINGENCY HAZARD AREA (CHA)− Used by ATC. Areas of airspace that are defined and distributed in advance of a launch or reentry operation and are activated in response to a failure.

(See AIRCRAFT HAZARD AREA.)
(See REFINED HAZARD AREA.)
(See TRANSITIONAL HAZARD AREA.)

CONTINUE− When used as a control instruction should be followed by another word or words clarifying what is expected of the pilot. Example: "continue taxi," "continue descent," "continue inbound," etc.

CONTROL AREA [ICAO]− A controlled airspace extending upwards from a specified limit above the earth.

CONTROL SECTOR− An airspace area of defined horizontal and vertical dimensions for which a controller or group of controllers has air traffic control responsibility, normally within an air route traffic control center or an approach control facility. Sectors are established based on predominant traffic flows, altitude strata, and controller workload. Pilot communications during operations within a sector are normally maintained on discrete frequencies assigned to the sector.

(See DISCRETE FREQUENCY.)

CONTROL SLASH− A radar beacon slash representing the actual position of the associated aircraft. Normally, the control slash is the one closest to the interrogating radar beacon site. When ARTCC radar is operating in narrowband (digitized) mode, the control slash is converted to a target symbol.

CONTROLLED AIRSPACE− An airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification.

a. Controlled airspace is a generic term that covers Class A, Class B, Class C, Class D, and Class E airspace.

b. Controlled airspace is also that airspace within which all aircraft operators are subject to certain pilot qualifications, operating rules, and equipment requirements in 14 CFR Part 91 (for specific operating requirements, please refer to 14 CFR Part 91). For IFR operations in any class of controlled airspace, a pilot must file an IFR flight plan and receive an appropriate ATC clearance. Each Class B, Class C, and Class D airspace area designated for an airport contains at least one primary airport around which the airspace is designated (for specific designations and descriptions of the airspace classes, please refer to 14 CFR Part 71).

c. Controlled airspace in the United States is designated as follows:

1. CLASS A− Generally, that airspace from 18,000 feet MSL up to and including FL 600, including the airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous States and Alaska. Unless otherwise authorized, all persons must operate their aircraft under IFR.

2. CLASS B− Generally, that airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of airport operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored and consists of a surface area and two or more layers (some Class B airspace areas resemble upside-down wedding cakes), and is designed to contain all published instrument procedures once an aircraft enters the airspace. An ATC clearance is required for all aircraft to operate in the area, and all aircraft that are so cleared receive separation services within the airspace. The cloud clearance requirement for VFR operations is "clear of clouds."

3. CLASS C− Generally, that airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Although the configuration of each Class C area is individually tailored, the airspace usually consists of a surface area with a 5 NM radius, a circle with a 10 NM radius that extends no lower than 1,200 feet up to 4,000 feet above the airport elevation, and an outer area that is not charted. Each person must establish two-way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while within the airspace. VFR aircraft are only separated from IFR aircraft within the airspace.

(See OUTER AREA.)

4. CLASS D− Generally, that airspace from the surface to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower. The configuration of each Class D airspace area is individually tailored and when instrument procedures are published, the airspace will normally be designed to contain the procedures. Arrival extensions for instrument approach procedures may be Class D or Class E airspace. Unless otherwise authorized, each person must establish two-way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while in the airspace. No separation services are provided to VFR aircraft.

5. CLASS E− Generally, if the airspace is not Class A, Class B, Class C, or Class D, and it is controlled airspace, it is Class E airspace. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument procedures. Also in this class are Federal airways, airspace beginning at either 700 or 1,200 feet AGL used to transition to/from the terminal or en route environment, en route domestic, and offshore airspace areas designated below 18,000 feet MSL. Unless designated at a lower altitude, Class E airspace begins at 14,500 MSL over the United States, including that airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous States and Alaska, up to, but not including 18,000 feet MSL, and the airspace above FL 600.

CONTROLLED AIRSPACE [ICAO]− An airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification.

Note: Controlled airspace is a generic term which covers ATS airspace Classes A, B, C, D, and E.

CONTROLLED TIME OF ARRIVAL− Arrival time assigned during a Traffic Management Program. This time may be modified due to adjustments or user options.

CONTROLLER−
(See AIR TRAFFIC CONTROL SPECIALIST.)

CONTROLLER [ICAO]− A person authorized to provide air traffic control services.

CONTROLLER PILOT DATA LINK COMMUNICATIONS (CPDLC)− A two−way digital communications system that conveys textual air traffic control messages between controllers and pilots using ground or satellite-based radio relay stations.

CONVECTIVE SIGMET− A weather advisory concerning convective weather significant to the safety of all aircraft. Convective SIGMETs are issued for tornadoes, lines of thunderstorms, embedded thunderstorms of any intensity level, areas of thunderstorms greater than or equal to VIP level 4 with an area coverage of $^{4}/_{10}$ (40%) or more, and hail $^{3}/_{4}$ inch or greater.
(See AIRMET.)
(See CWA.)
(See GRAPHICAL AIRMEN'S METEOROLOGICAL INFORMATION.)
(See SAW.)
(See SIGMET.)
(Refer to AIM.)

CONVECTIVE SIGNIFICANT METEOROLOGICAL INFORMATION−
(See CONVECTIVE SIGMET.)

COOPERATIVE SURVEILLANCE− Any surveillance system, such as secondary surveillance radar (SSR), wide−area multilateration (WAM), or ADS−B, that is dependent upon the presence of certain equipment onboard the aircraft or vehicle to be detected.
(See AUTOMATIC DEPENDENT SURVEILLANCE−BROADCAST.)
(See NON−COOPERATIVE SURVEILLANCE.)
(See RADAR.)
(See WIDE AREA MULTILATERATION.)

COORDINATES− The intersection of lines of reference, usually expressed in degrees/minutes/seconds of latitude and longitude, used to determine position or location.

COORDINATION FIX− The fix in relation to which facilities will handoff, transfer control of an aircraft, or coordinate flight progress data. For terminal facilities, it may also serve as a clearance for arriving aircraft.

COPTER−
(See HELICOPTER.)

CORRECTION− An error has been made in the transmission and the correct version follows.

COUPLED APPROACH− An instrument approach performed by the aircraft autopilot, and/or visually depicted on the flight director, which is receiving position information and/or steering commands from onboard navigational equipment. In general, coupled non-precision approaches must be flown manually (autopilot disengaged) at altitudes lower than 50 feet AGL below the minimum descent altitude, and coupled precision approaches must be flown manually (autopilot disengaged) below 50 feet AGL unless authorized to conduct autoland operations. Coupled instrument approaches are commonly flown to the allowable IFR weather minima established by the operator or PIC, or flown VFR for training and safety.

COUPLED SCHEDULING (CS)/ EXTENDED METERING (XM)− Adds additional Constraint Satisfaction Points for metered aircraft along their route. This provides the ability to merge flows upstream from the meter fix and results in a more optimal distribution of delays over a greater distance from the airport, increased meter list accuracy, and more accurate delivery to the meter fix.

COURSE−

a. The intended direction of flight in the horizontal plane measured in degrees from north.

b. The ILS localizer signal pattern usually specified as the front course or the back course.

(See BEARING.)
(See INSTRUMENT LANDING SYSTEM.)
(See RADIAL.)

CPDLC−
(See CONTROLLER PILOT DATA LINK COMMUNICATIONS.)

CPL [ICAO]−
(See ICAO term CURRENT FLIGHT PLAN.)

CREWMEMBER (UAS)− A person assigned to perform an operational duty. A UAS crewmember includes the remote pilot in command, the person manipulating the controls, and visual observers but may also include other persons as appropriate or required to ensure the safe operation of the UAS (e.g., sensor operator, ground control station operator).

CRITICAL ENGINE− The engine which, upon failure, would most adversely affect the performance or handling qualities of an aircraft.

CROSS (FIX) AT (ALTITUDE)− Used by ATC when a specific altitude restriction at a specified fix is required.

CROSS (FIX) AT OR ABOVE (ALTITUDE)− Used by ATC when an altitude restriction at a specified fix is required. It does not prohibit the aircraft from crossing the fix at a higher altitude than specified; however, the higher altitude may not be one that will violate a succeeding altitude restriction or altitude assignment.
(See ALTITUDE RESTRICTION.)
(Refer to AIM.)

CROSS (FIX) AT OR BELOW (ALTITUDE)− Used by ATC when a maximum crossing altitude at a specific fix is required. It does not prohibit the aircraft from crossing the fix at a lower altitude; however, it must be at or above the minimum IFR altitude.
(See ALTITUDE RESTRICTION.)
(See MINIMUM IFR ALTITUDES.)
(Refer to 14 CFR Part 91.)

CROSSWIND−

a. When used concerning the traffic pattern, the word means "crosswind leg."
(See TRAFFIC PATTERN.)

b. When used concerning wind conditions, the word means a wind not parallel to the runway or the path of an aircraft.
(See CROSSWIND COMPONENT.)

CROSSWIND COMPONENT− The wind component measured in knots at 90 degrees to the longitudinal axis of the runway.

CRUISE− Used in an ATC clearance to authorize a pilot to conduct flight at any altitude from the minimum IFR altitude up to and including the altitude specified in the clearance. The pilot may level off at any intermediate altitude within this block of airspace. Climb/descent within the block is to be made at the discretion of the pilot. However, once the pilot starts descent and verbally reports leaving an altitude in the block, he/she may not return to that altitude without additional ATC clearance. Further, it is approval for the pilot to proceed to and make an approach at destination airport and can be used in conjunction with:

a. An airport clearance limit at locations with a standard/special instrument approach procedure. The CFRs require that if an instrument letdown to an airport is necessary, the pilot shall make the letdown in accordance with a standard/special instrument approach procedure for that airport, or

b. An airport clearance limit at locations that are within/below/outside controlled airspace and without a standard/special instrument approach procedure. Such a clearance is NOT AUTHORIZATION for the pilot to descend under IFR conditions below the applicable minimum IFR altitude nor does it imply that ATC is exercising control over aircraft in Class G airspace; however, it provides a means for the aircraft to proceed to destination airport, descend, and land in accordance with applicable CFRs governing VFR flight operations. Also, this provides search and rescue protection until such time as the IFR flight plan is closed.
(See INSTRUMENT APPROACH PROCEDURE.)

CRUISE CLIMB− A climb technique employed by aircraft, usually at a constant power setting, resulting in an increase of altitude as the aircraft weight decreases.

CRUISING ALTITUDE− An altitude or flight level maintained during en route level flight. This is a constant altitude and should not be confused with a cruise clearance.
(See ALTITUDE.)
(See ICAO term CRUISING LEVEL.)

CRUISING LEVEL−
(See CRUISING ALTITUDE.)

CRUISING LEVEL [ICAO]− A level maintained during a significant portion of a flight.

CSP−
(See CONSTRAINT SATISFACTION POINT)

CT MESSAGE− An EDCT time generated by the ATCSCC to regulate traffic at arrival airports. Normally, a CT message is automatically transferred from the traffic management system computer to the NAS en route computer and appears as an EDCT. In the event of a communication failure between the traffic management system computer and the NAS, the CT message can be manually entered by the TMC at the en route facility.

CTA−
(See CONTROLLED TIME OF ARRIVAL.)
(See ICAO term CONTROL AREA.)

CTAF−
(See COMMON TRAFFIC ADVISORY FREQUENCY.)

CTOP−
(See COLLABORATIVE TRAJECTORY OPTIONS PROGRAM)

CTRD−
(See CERTIFIED TOWER RADAR DISPLAY.)

CURRENT FLIGHT PLAN [ICAO]− The flight plan, including changes, if any, brought about by subsequent clearances.

CVFP APPROACH−
(See CHARTED VISUAL FLIGHT PROCEDURE APPROACH.)

CWA−
(See CENTER WEATHER ADVISORY and WEATHER ADVISORY.)

CWT−
(See CONSOLIDATED WAKE TURBULENCE.)

D

D−ATIS−

(See DIGITAL-AUTOMATIC TERMINAL INFORMATION SERVICE.)

D−ATIS [ICAO]−

(See ICAO Term DATA LINK AUTOMATIC TERMINAL INFORMATION SERVICE.)

DA [ICAO]−

(See ICAO Term DECISION ALTITUDE/DECISION HEIGHT.)

DAIR−

(See DIRECT ALTITUDE AND IDENTITY READOUT.)

DANGER AREA [ICAO]− An airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.

Note: The term “Danger Area” is not used in reference to areas within the United States or any of its possessions or territories.

DAS−

(See DELAY ASSIGNMENT.)

DATA BLOCK−

(See ALPHANUMERIC DISPLAY.)

DATA LINK AUTOMATIC TERMINAL INFORMATION SERVICE (D−ATIS) [ICAO]− The provision of ATIS via data link.

DCT−

(See DELAY COUNTDOWN TIMER.)

DEAD RECKONING− Dead reckoning, as applied to flying, is the navigation of an airplane solely by means of computations based on airspeed, course, heading, wind direction, and speed, groundspeed, and elapsed time.

DEBRIS RESPONSE AREA (DRA)− Used by ATC. Areas of airspace that may be activated in response to unplanned falling debris in the NAS.

DECISION ALTITUDE/DECISION HEIGHT [ICAO Annex 6]- A specified altitude or height (A/H) in the precision approach at which a missed approach must be initiated if the required visual reference to continue the approach has not been established.
1. Decision altitude (DA) is referenced to mean sea level and decision height (DH) is referenced to the threshold elevation.
2. Category II and III minima are expressed as a DH and not a DA. Minima is assessed by reference to a radio altimeter and not a barometric altimeter, which makes the minima a DH.
3. The required visual reference means that section of the visual aids or of the approach area which should have been in view for sufficient time for the pilot to have made an assessment of the aircraft position and rate of change of position, in relation to the desired flight path.

DECISION ALTITUDE (DA)− A specified altitude (mean sea level (MSL)) on an instrument approach procedure (ILS, GLS, vertically guided RNAV) at which the pilot must decide whether to continue the approach or initiate an immediate missed approach if the pilot does not see the required visual references.

DECISION HEIGHT (DH)− With respect to the operation of aircraft, means the height at which a decision must be made during an ILS or PAR instrument approach to either continue the approach or to execute a missed approach.

(See ICAO term DECISION ALTITUDE/DECISION HEIGHT.)

DECODER− The device used to decipher signals received from ATCRBS transponders to effect their display as select codes.

(See CODES.)
(See RADAR.)

DEFENSE AREA− Any airspace of the contiguous United States that is not an ADIZ in which the control of aircraft is required for reasons of national security.

DEFENSE VISUAL FLIGHT RULES− Rules applicable to flights within an ADIZ conducted under the visual flight rules in 14 CFR Part 91.

(See AIR DEFENSE IDENTIFICATION ZONE.)
(Refer to 14 CFR Part 91.)
(Refer to 14 CFR Part 99.)

DELAY ASSIGNMENT (DAS)− Delays are distributed to aircraft based on the traffic management program parameters. The delay assignment is calculated in 15−minute increments and appears as a table in Traffic Flow Management System (TFMS).

DELAY COUNTDOWN TIMER (DCT)− The display of the delay that must be absorbed by a flight prior to crossing a Meter Reference Element (MRE) to meet the TBFM Scheduled Time of Arrival (STA). It is calculated by taking the difference between the frozen STA and the Estimated Time of Arrival (ETA).

DELAY INDEFINITE (REASON IF KNOWN) EXPECT FURTHER CLEARANCE (TIME)− Used by ATC to inform a pilot when an accurate estimate of the delay time and the reason for the delay cannot immediately be determined; e.g., a disabled aircraft on the runway, terminal or center area saturation, weather below landing minimums, etc.

(See EXPECT FURTHER CLEARANCE (TIME).)

DEPARTURE CENTER− The ARTCC having jurisdiction for the airspace that generates a flight to the impacted airport.

DEPARTURE CONTROL− A function of an approach control facility providing air traffic control service for departing IFR and, under certain conditions, VFR aircraft.

(See APPROACH CONTROL FACILITY.)
(Refer to AIM.)

DEPARTURE SEQUENCING PROGRAM− A program designed to assist in achieving a specified interval over a common point for departures.

DEPARTURE TIME− The time an aircraft becomes airborne.

DEPARTURE VIEWER− A capability within the Traffic Flow Management System (TFMS) that provides combined displays for monitoring departure by fixes and departure airports. Traffic management personnel can customize the displays by selecting the departure airports and fixes of interest. The information displayed is the demand for the resource (fix or departure airport) in time bins with the flight list and a flight history for one flight at a time. From the display, flights can be selected for route amendment, one or more at a time, and the Route Amendment Dialogue (RAD) screen automatically opens for easy route selection and execution. Reroute options are based on Coded Departure Route (CDR) database and Trajectory Options Set (TOS) (when available).

DESCEND VIA– An abbreviated ATC clearance that requires compliance with a published procedure lateral path and associated speed restrictions and provides a pilot-discretion descent to comply with published altitude restrictions.

DESCENT SPEED ADJUSTMENTS− Speed deceleration calculations made to determine an accurate VTA. These calculations start at the transition point and use arrival speed segments to the vertex.

DESIGNATED COMMON TRAFFIC ADVISORY FREQUENCY (CTAF) AREA− In Alaska, in addition to being designated for the purpose of carrying out airport advisory practices while operating to or from an airport without an operating airport traffic control tower, a CTAF may also be designated for the purpose of carrying out advisory practices for operations in and through areas with a high volume of VFR traffic.

DESIRED COURSE−

a. True− A predetermined desired course direction to be followed (measured in degrees from true north).

b. Magnetic− A predetermined desired course direction to be followed (measured in degrees from local magnetic north).

DESIRED TRACK− The planned or intended track between two waypoints. It is measured in degrees from either magnetic or true north. The instantaneous angle may change from point to point along the great circle track between waypoints.

DETRESFA (DISTRESS PHASE) [ICAO]− The code word used to designate an emergency phase wherein there is reasonable certainty that an aircraft and its occupants are threatened by grave and imminent danger or require immediate assistance.

DEVIATIONS−

a. A departure from a current clearance, such as an off course maneuver to avoid weather or turbulence.

b. Where specifically authorized in the CFRs and requested by the pilot, ATC may permit pilots to deviate from certain regulations.

DH−
(See DECISION HEIGHT.)

DH [ICAO]−
(See ICAO Term DECISION ALTITUDE/ DECISION HEIGHT.)

DIGITAL-AUTOMATIC TERMINAL INFORMATION SERVICE (D-ATIS)− The service provides text messages to aircraft, airlines, and other users outside the standard reception range of conventional ATIS via landline and data link communications to the cockpit. Also, the service provides a computer−synthesized voice message that can be transmitted to all aircraft within range of existing transmitters. The Terminal Data Link System (TDLS) D-ATIS application uses weather inputs from local automated weather sources or manually entered meteorological data together with preprogrammed menus to provide standard information to users. Airports with D-ATIS capability are listed in the Chart Supplement U.S.

DIGITAL TARGET− A computer−generated symbol representing an aircraft's position, based on a primary return or radar beacon reply, shown on a digital display.

DIGITAL TERMINAL AUTOMATION SYSTEM (DTAS)− A system where digital radar and beacon data is presented on digital displays and the operational program monitors the system performance on a real−time basis.

DIGITIZED TARGET− A computer−generated indication shown on an analog radar display resulting from a primary radar return or a radar beacon reply.

DIRECT− Straight line flight between two navigational aids, fixes, points, or any combination thereof. When used by pilots in describing off-airway routes, points defining direct route segments become compulsory reporting points unless the aircraft is under radar contact.

DIRECTLY BEHIND− An aircraft is considered to be operating directly behind when it is following the actual flight path of the lead aircraft over the surface of the earth except when applying wake turbulence separation criteria.

DISCRETE BEACON CODE−
(See DISCRETE CODE.)

DISCRETE CODE− As used in the Air Traffic Control Radar Beacon System (ATCRBS), any one of the 4096 selectable Mode 3/A aircraft transponder codes except those ending in zero zero; e.g., discrete codes: 0010, 1201, 2317, 7777; nondiscrete codes: 0100, 1200, 7700. Nondiscrete codes are normally reserved for radar facilities that are not equipped with discrete decoding capability and for other purposes such as emergencies (7700), VFR aircraft (1200), etc.

(See RADAR.)
(Refer to AIM.)

DISCRETE FREQUENCY− A separate radio frequency for use in direct pilot-controller communications in air traffic control which reduces frequency congestion by controlling the number of aircraft operating on a particular frequency at one time. Discrete frequencies are normally designated for each control sector in en route/terminal ATC facilities. Discrete frequencies are listed in the Chart Supplement U.S. and the DoD FLIP IFR En Route Supplement.

(See CONTROL SECTOR.)

DISPLACED THRESHOLD− A threshold that is located at a point on the runway other than the designated beginning of the runway.

(See THRESHOLD.)
(Refer to AIM.)

DISTANCE MEASURING EQUIPMENT (DME)− Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.

(See TACAN.)
(See VORTAC.)

DISTRESS− A condition of being threatened by serious and/or imminent danger and of requiring immediate assistance.

DIVE BRAKES−

(See SPEED BRAKES.)

DIVERSE VECTOR AREA− In a radar environment, that area in which a prescribed departure route is not required as the only suitable route to avoid obstacles. The area in which random radar vectors below the MVA/MIA, established in accordance with the TERPS criteria for diverse departures, obstacles and terrain avoidance, may be issued to departing aircraft.

DIVERSION (DVRSN)− Flights that are required to land at other than their original destination for reasons beyond the control of the pilot/company, e.g. periods of significant weather.

DME−

(See DISTANCE MEASURING EQUIPMENT.)

DME FIX− A geographical position determined by reference to a navigational aid which provides distance and azimuth information. It is defined by a specific distance in nautical miles and a radial, azimuth, or course (i.e., localizer) in degrees magnetic from that aid.

(See DISTANCE MEASURING EQUIPMENT.)
(See FIX.)

DME SEPARATION− Spacing of aircraft in terms of distances (nautical miles) determined by reference to distance measuring equipment (DME).

(See DISTANCE MEASURING EQUIPMENT.)

DoD FLIP− Department of Defense Flight Information Publications used for flight planning, en route, and terminal operations. FLIP is produced by the National Geospatial−Intelligence Agency (NGA) for world-wide use. United States Government Flight Information Publications (en route charts and instrument approach procedure charts) are incorporated in DoD FLIP for use in the National Airspace System (NAS).

DOMESTIC AIRSPACE− Airspace which overlies the continental land mass of the United States plus Hawaii and U.S. possessions. Domestic airspace extends to 12 miles offshore.

DOMESTIC NOTICE− A special notice or notice containing graphics or plain language text pertaining to almost every aspect of aviation, such as military training areas, large scale sporting events, air show information, Special

Traffic Management Programs (STMPs), and airport−specific information. These notices are applicable to operations within the United States and can be found on the Domestic Notices website.

DOWNBURST− A strong downdraft which induces an outburst of damaging winds on or near the ground. Damaging winds, either straight or curved, are highly divergent. The sizes of downbursts vary from 1/2 mile or less to more than 10 miles. An intense downburst often causes widespread damage. Damaging winds, lasting 5 to 30 minutes, could reach speeds as high as 120 knots.

DOWNWIND LEG−
(See TRAFFIC PATTERN.)

DP−
(See INSTRUMENT DEPARTURE PROCEDURE.)

DRA−
(See DEBRIS RESPONSE AREA.)

DRAG CHUTE− A parachute device installed on certain aircraft which is deployed on landing roll to assist in deceleration of the aircraft.

DROP ZONE− Any pre-determined area upon which parachutists or objects land after making an intentional parachute jump or drop.
(Refer to 14 CFR §105.3, Definitions)

DSP−
(See DEPARTURE SEQUENCING PROGRAM.)

DTAS−
(See DIGITAL TERMINAL AUTOMATION SYSTEM.)

DUE REGARD− A phase of flight wherein an aircraft commander of a State-operated aircraft assumes responsibility to separate his/her aircraft from all other aircraft.
(See also FAA Order JO 7110.65, Para 1−2−1, WORD MEANINGS.)

DUTY RUNWAY−
(See RUNWAY IN USE/ACTIVE RUNWAY/DUTY RUNWAY.)

DVA−
(See DIVERSE VECTOR AREA.)

DVFR−
(See DEFENSE VISUAL FLIGHT RULES.)

DVFR FLIGHT PLAN− A flight plan filed for a VFR aircraft which intends to operate in airspace within which the ready identification, location, and control of aircraft are required in the interest of national security.

DVRSN−
(See DIVERSION.)

DYNAMIC− Continuous review, evaluation, and change to meet demands.

DYNAMIC RESTRICTIONS− Those restrictions imposed by the local facility on an “as needed” basis to manage unpredictable fluctuations in traffic demands.

E

EAS−
(See EN ROUTE AUTOMATION SYSTEM.)

EDCT−
(See EXPECT DEPARTURE CLEARANCE TIME.)

EDST−
(See EN ROUTE DECISION SUPPORT TOOL)

EFC−
(See EXPECT FURTHER CLEARANCE (TIME).)

ELT−
(See EMERGENCY LOCATOR TRANSMITTER.)

EMBEDDED ROUTE TEXT− An EDST notification that an ADR/ADAR/AAR has been applied to the flight plan. Within the route field, sub−fields consisting of an adapted route or an embedded change in the route are color−coded in cyan with cyan brackets around the sub−field.
(See EN ROUTE DECISION SUPPORT TOOL.)

EMERGENCY− A distress or an urgency condition.

EMERGENCY AUTOLAND SYSTEM− This system, if activated, will determine an optimal airport, plot a course, broadcast the aircraft's intentions, fly to the airport, land, and (depending on the model) shut down the engines. Though the system will broadcast the aircraft's intentions, the controller should assume that transmissions to the aircraft will not be acknowledged.

EMERGENCY DESCENT MODE− This automated system senses conditions conducive to hypoxia (cabin depressurization). If an aircraft is equipped and the system is activated, it is designed to turn the aircraft up to 90 degrees, then descend to a lower altitude and level off, giving the pilot(s) time to recover.

EMERGENCY LOCATOR TRANSMITTER (ELT)− A radio transmitter attached to the aircraft structure which operates from its own power source on 121.5 MHz and 243.0 MHz. It aids in locating downed aircraft by radiating a downward sweeping audio tone, 2-4 times per second. It is designed to function without human action after an accident.
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

E-MSAW−
(See EN ROUTE MINIMUM SAFE ALTITUDE WARNING.)

ENHANCED FLIGHT VISION SYSTEM (EFVS)− An EFVS is an installed aircraft system which uses an electronic means to provide a display of the forward external scene topography (the natural or man−made features of a place or region especially in a way to show their relative positions and elevation) through the use of imaging sensors, including but not limited to forward−looking infrared, millimeter wave radiometry, millimeter wave radar, or low−light level image intensification. An EFVS includes the display element, sensors, computers and power supplies, indications, and controls. An operator's authorization to conduct an EFVS operation may have provisions which allow pilots to conduct IAPs when the reported weather is below minimums prescribed on the IAP to be flown.

ENHANCED SPECIAL REPORTING SERVICE (eSRS)– An automated service used to enhance search and rescue operations that provides flight service specialists in Alaska direct information from the aircraft's registered tracking device.

EN ROUTE AIR TRAFFIC CONTROL SERVICES− Air traffic control service provided aircraft on IFR flight plans, generally by centers, when these aircraft are operating between departure and destination terminal areas.

When equipment, capabilities, and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft.
(See AIR ROUTE TRAFFIC CONTROL CENTER.)
(Refer to AIM.)

EN ROUTE AUTOMATION SYSTEM (EAS)− The complex integrated environment consisting of situation display systems, surveillance systems and flight data processing, remote devices, decision support tools, and the related communications equipment that form the heart of the automated IFR air traffic control system. It interfaces with automated terminal systems and is used in the control of en route IFR aircraft.
(Refer to AIM.)

EN ROUTE CHARTS−
(See AERONAUTICAL CHART.)

EN ROUTE DECISION SUPPORT TOOL (EDST)− An automated tool provided at each Radar Associate position in selected En Route facilities. This tool utilizes flight and radar data to determine present and future trajectories for all active and proposal aircraft and provides enhanced automated flight data management.

EN ROUTE DESCENT− Descent from the en route cruising altitude which takes place along the route of flight.

EN ROUTE HIGH ALTITUDE CHARTS−
(See AERONAUTICAL CHART.)

EN ROUTE LOW ALTITUDE CHARTS−
(See AERONAUTICAL CHART.)

EN ROUTE MINIMUM SAFE ALTITUDE WARNING (E−MSAW)− A function of the EAS that aids the controller by providing an alert when a tracked aircraft is below or predicted by the computer to go below a predetermined minimum IFR altitude (MIA).

EN ROUTE TRANSITION−
(See SEGMENTS OF A SID/STAR.)

EN ROUTE TRANSITION WAYPOINT
(See SEGMENTS OF A SID/STAR.)

eSRS−
(See ENHANCED SPECIAL REPORTING SERVICE.)

EST−
(See ESTIMATED.)

ESTABLISHED− To be stable or fixed at an altitude or on a course, route, route segment, heading, instrument approach or departure procedure, etc.

ESTABLISHED ON RNP (EoR) CONCEPT− A system of authorized instrument approaches, ATC procedures, surveillance, and communication requirements that allow aircraft operations to be safely conducted with approved reduced separation criteria once aircraft are established on a PBN segment of a published instrument flight procedure.

ESTIMATED (EST)−When used in NOTAMs “EST” is a contraction that is used by the issuing authority only when the condition is expected to return to service prior to the expiration time. Using “EST” lets the user know that this NOTAM has the possibility of returning to service earlier than the expiration time. Any NOTAM which includes an “EST” will be auto−expired at the designated expiration time.

ESTIMATED ELAPSED TIME [ICAO]− The estimated time required to proceed from one significant point to another.
(See ICAO Term TOTAL ESTIMATED ELAPSED TIME.)

ESTIMATED OFF-BLOCK TIME [ICAO]− The estimated time at which the aircraft will commence movement associated with departure.

ESTIMATED POSITION ERROR (EPE)−
(See Required Navigation Performance)

ESTIMATED TIME OF ARRIVAL− The time the flight is estimated to arrive at the gate (scheduled operators) or the actual runway on times for nonscheduled operators.

ESTIMATED TIME EN ROUTE− The estimated flying time from departure point to destination (lift-off to touchdown).

ETA−
(See ESTIMATED TIME OF ARRIVAL.)

ETE−
(See ESTIMATED TIME EN ROUTE.)

EXECUTE MISSED APPROACH− Instructions issued to a pilot making an instrument approach which means continue inbound to the missed approach point and execute the missed approach procedure as described on the Instrument Approach Procedure Chart or as previously assigned by ATC. The pilot may climb immediately to the altitude specified in the missed approach procedure upon making a missed approach. No turns should be initiated prior to reaching the missed approach point. When conducting an ASR or PAR approach, execute the assigned missed approach procedure immediately upon receiving instructions to "execute missed approach."
(Refer to AIM.)

EXPECT (ALTITUDE) AT (TIME) or (FIX)− Used under certain conditions to provide a pilot with an altitude to be used in the event of two-way communications failure. It also provides altitude information to assist the pilot in planning.
(Refer to AIM.)

EXPECT DEPARTURE CLEARANCE TIME (EDCT)− The runway release time assigned to an aircraft in a traffic management program and shown on the flight progress strip as an EDCT.
(See GROUND DELAY PROGRAM.)

EXPECT FURTHER CLEARANCE (TIME)− The time a pilot can expect to receive clearance beyond a clearance limit.

EXPECT FURTHER CLEARANCE VIA (AIRWAYS, ROUTES OR FIXES)− Used to inform a pilot of the routing he/she can expect if any part of the route beyond a short range clearance limit differs from that filed.

EXPEDITE− Used by ATC when prompt compliance is required to avoid the development of an imminent situation. Expedite climb/descent normally indicates to a pilot that the approximate best rate of climb/descent should be used without requiring an exceptional change in aircraft handling characteristics.

F

FAA−RECOGNIZED IDENTIFICATION AREA (FRIA)− A defined geographic area where persons can operate UAS without remote identification, provided they maintain visual line of sight.

FAF−
(See FINAL APPROACH FIX.)

FALLEN HERO– Remains of fallen members of the United States military are often returned home by aircraft. These flights may be identified with the phrase "FALLEN HERO" added to the remarks section of the flight plan, or they may be transmitted via air/ground communications. If able, these flights will receive priority handling.

FAST FILE− An FSS system whereby a pilot files a flight plan via telephone that is recorded and later transcribed for transmission to the appropriate air traffic facility. (Alaska only.)

FAWP− Final Approach Waypoint

FEATHERED PROPELLER− A propeller whose blades have been rotated so that the leading and trailing edges are nearly parallel with the aircraft flight path to stop or minimize drag and engine rotation. Normally used to indicate shutdown of a reciprocating or turboprop engine due to malfunction.

FEDERAL AIRWAYS−
(See LOW ALTITUDE AIRWAY STRUCTURE.)

FEEDER FIX− The fix depicted on Instrument Approach Procedure Charts which establishes the starting point of the feeder route.

FEEDER ROUTE− A route depicted on instrument approach procedure charts to designate routes for aircraft to proceed from the en route structure to the initial approach fix (IAF).
(See INSTRUMENT APPROACH PROCEDURE.)

FERRY FLIGHT− A flight for the purpose of:

a. Returning an aircraft to base.

b. Delivering an aircraft from one location to another.

c. Moving an aircraft to and from a maintenance base. Ferry flights, under certain conditions, may be conducted under terms of a special flight permit.

FIELD ELEVATION−
(See AIRPORT ELEVATION.)

FILED− Normally used in conjunction with flight plans, meaning a flight plan has been submitted to ATC.

FILED EN ROUTE DELAY− Any of the following preplanned delays at points/areas along the route of flight which require special flight plan filing and handling techniques.

a. Terminal Area Delay. A delay within a terminal area for touch-and-go, low approach, or other terminal area activity.

b. Special Use Airspace Delay. A delay within a Military Operations Area, Restricted Area, Warning Area, or ATC Assigned Airspace.

c. Aerial Refueling Delay. A delay within an Aerial Refueling Track or Anchor.

FILED FLIGHT PLAN− The flight plan as filed with an ATS unit by the pilot or his/her designated representative without any subsequent changes or clearances.

FINAL− Commonly used to mean that an aircraft is on the final approach course or is aligned with a landing area.
(See FINAL APPROACH COURSE.)
(See FINAL APPROACH-IFR.)
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

FINAL APPROACH [ICAO]− That part of an instrument approach procedure which commences at the specified final approach fix or point, or where such a fix or point is not specified.

a. At the end of the last procedure turn, base turn or inbound turn of a racetrack procedure, if specified; or

b. At the point of interception of the last track specified in the approach procedure; and ends at a point in the vicinity of an aerodrome from which:

1. A landing can be made; or

2. A missed approach procedure is initiated.

FINAL APPROACH COURSE− A bearing/radial/track of an instrument approach leading to a runway or an extended runway centerline all without regard to distance.

FINAL APPROACH FIX− The fix from which the final approach (IFR) to an airport is executed and which identifies the beginning of the final approach segment. It is designated on Government charts by the Maltese Cross symbol for nonprecision approaches and the lightning bolt symbol, designating the PFAF, for precision approaches; or when ATC directs a lower-than-published glideslope/path or vertical path intercept altitude, it is the resultant actual point of the glideslope/path or vertical path intercept.
(See FINAL APPROACH POINT.)
(See GLIDESLOPE INTERCEPT ALTITUDE.)
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

FINAL APPROACH-IFR− The flight path of an aircraft which is inbound to an airport on a final instrument approach course, beginning at the final approach fix or point and extending to the airport or the point where a circle-to-land maneuver or a missed approach is executed.
(See FINAL APPROACH COURSE.)
(See FINAL APPROACH FIX.)
(See FINAL APPROACH POINT.)
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)
(See ICAO term FINAL APPROACH.)

FINAL APPROACH POINT− The point, applicable only to a nonprecision approach with no depicted FAF (such as an on airport VOR), where the aircraft is established inbound on the final approach course from the procedure turn and where the final approach descent may be commenced. The FAP serves as the FAF and identifies the beginning of the final approach segment.
(See FINAL APPROACH FIX.)
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

FINAL APPROACH SEGMENT−
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

FINAL APPROACH SEGMENT [ICAO]− That segment of an instrument approach procedure in which alignment and descent for landing are accomplished.

FINAL CONTROLLER− The controller providing information and final approach guidance during PAR and ASR approaches utilizing radar equipment.
(See RADAR APPROACH.)

FINAL GUARD SERVICE− A value added service provided in conjunction with LAA/RAA only during periods of significant and fast changing weather conditions that may affect landing and takeoff operations.

FINAL MONITOR AID− A high resolution color display that is equipped with the controller alert system hardware/software used to monitor the no transgression zone (NTZ) during simultaneous parallel approach operations. The display includes alert algorithms providing the target predictors, a color change alert when a target penetrates or is predicted to penetrate the no transgression zone (NTZ), synthesized voice alerts, and digital mapping.
(See RADAR APPROACH.)

FINAL MONITOR CONTROLLER− Air Traffic Control Specialist assigned to radar monitor the flight path of aircraft during simultaneous parallel (approach courses spaced less than 9000 feet/9200 feet above 5000 feet) and simultaneous close parallel approach operations. Each runway is assigned a final monitor controller during simultaneous parallel and simultaneous close parallel ILS approaches.

FIR−
(See FLIGHT INFORMATION REGION.)

FIRST PERSON VIEW− UAS operation in which imagery is transmitted to the UAS pilot by an onboard UA camera.

FIRST TIER CENTER− An ARTCC immediately adjacent to the impacted center.

FIS−B−
(See FLIGHT INFORMATION SERVICE−BROADCAST.)

FIX− A geographical position determined by visual reference to the surface, by reference to one or more radio NAVAIDs, by celestial plotting, or by another navigational device.

FIX BALANCING− A process whereby aircraft are evenly distributed over several available arrival fixes reducing delays and controller workload.

FLAG− A warning device incorporated in certain airborne navigation and flight instruments indicating that:

a. Instruments are inoperative or otherwise not operating satisfactorily, or

b. Signal strength or quality of the received signal falls below acceptable values.

FLAG ALARM−
(See FLAG.)

FLAMEOUT− An emergency condition caused by a loss of engine power.

FLAMEOUT PATTERN− An approach normally conducted by a single-engine military aircraft experiencing loss or anticipating loss of engine power or control. The standard overhead approach starts at a relatively high altitude over a runway ("high key") followed by a continuous 180 degree turn to a high, wide position ("low key") followed by a continuous 180 degree turn final. The standard straight-in pattern starts at a point that results in a straight-in approach with a high rate of descent to the runway. Flameout approaches terminate in the type approach requested by the pilot (normally fullstop).

FLIGHT CHECK− A call sign prefix used by FAA aircraft engaged in flight inspection/certification of navigational aids and flight procedures. The word "recorded" may be added as a suffix; e.g., "Flight Check 320 recorded" to indicate that an automated flight inspection is in progress in terminal areas.
(See FLIGHT INSPECTION.)
(Refer to AIM.)

FLIGHT DATA [FSS]− The primary task of the FSS flight data position is information management. Flight data services include the development, translation, processing, and coordination of aeronautical, meteorological, and aviation information.

FLIGHT FOLLOWING−
(See TRAFFIC ADVISORIES.)

FLIGHT INFORMATION REGION− An airspace of defined dimensions within which Flight Information Service and Alerting Service are provided.

a. Flight Information Service. A service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights.

b. Alerting Service. A service provided to notify appropriate organizations regarding aircraft in need of search and rescue aid and to assist such organizations as required.

FLIGHT INFORMATION SERVICE− A service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights.

FLIGHT INFORMATION SERVICE−BROADCAST (FIS−B)− A ground broadcast service provided through the ADS−B Broadcast Services network over the UAT data link that operates on 978 MHz. The FIS−B system provides pilots and flight crews of properly equipped aircraft with a cockpit display of certain aviation weather and aeronautical information.

FLIGHT INSPECTION− Inflight investigation and evaluation of a navigational aid to determine whether it meets established tolerances.

(See FLIGHT CHECK.)
(See NAVIGATIONAL AID.)

FLIGHT LEVEL− A level of constant atmospheric pressure related to a reference datum of 29.92 inches of mercury. Each is stated in three digits that represent hundreds of feet. For example, flight level (FL) 250 represents a barometric altimeter indication of 25,000 feet; FL 255, an indication of 25,500 feet.

(See ICAO term FLIGHT LEVEL.)

FLIGHT LEVEL [ICAO]− A surface of constant atmospheric pressure which is related to a specific pressure datum, 1013.2 hPa (1013.2 mb), and is separated from other such surfaces by specific pressure intervals.

Note 1: A pressure type altimeter calibrated in accordance with the standard atmosphere:
a. When set to a QNH altimeter setting, will indicate altitude;
b. When set to a QFE altimeter setting, will indicate height above the QFE reference datum; and
c. When set to a pressure of 1013.2 hPa
(1013.2 mb), may be used to indicate flight levels.

Note 2: The terms ‘height’ and ‘altitude,’ used in Note 1 above, indicate altimetric rather than geometric heights and altitudes.

FLIGHT LINE− A term used to describe the precise movement of a civil photogrammetric aircraft along a predetermined course(s) at a predetermined altitude during the actual photographic run.

FLIGHT MANAGEMENT SYSTEMS− A computer system that uses a large data base to allow routes to be preprogrammed and fed into the system by means of a data loader. The system is constantly updated with respect to position accuracy by reference to conventional navigation aids. The sophisticated program and its associated data base ensures that the most appropriate aids are automatically selected during the information update cycle.

FLIGHT PATH− A line, course, or track along which an aircraft is flying or intended to be flown.

(See COURSE.)
(See TRACK.)

FLIGHT PLAN− Specified information relating to the intended flight of an aircraft that is filed electronically, orally, or in writing with an FSS, third−party vendor, or an ATC facility.

(See FAST FILE.)
(See FILED.)
(Refer to AIM.)

FLIGHT PLAN AREA (FPA)− The geographical area assigned to a flight service station (FSS) for the purpose of establishing primary responsibility for services that may include search and rescue for VFR aircraft, issuance of NOTAMs, pilot briefings, inflight services, broadcast services, emergency services, flight data processing, international operations, and aviation weather services. Large consolidated FSS facilities may combine FPAs into larger areas of responsibility (AOR).

(See FLIGHT SERVICE STATION.)
(See TIE-IN FACILITY.)

FLIGHT RECORDER− A general term applied to any instrument or device that records information about the performance of an aircraft in flight or about conditions encountered in flight. Flight recorders may make records of airspeed, outside air temperature, vertical acceleration, engine RPM, manifold pressure, and other pertinent variables for a given flight.

(See ICAO term FLIGHT RECORDER.)

FLIGHT RECORDER [ICAO]− Any type of recorder installed in the aircraft for the purpose of complementing accident/incident investigation.

Note: See Annex 6 Part I, for specifications relating to flight recorders.

FLIGHT SERVICE STATION (FSS)− An air traffic facility which provides pilot briefings, flight plan processing, en route flight advisories, search and rescue services, and assistance to lost aircraft and aircraft in emergency situations. FSS also relay ATC clearances, process Notices to Air Missions, and broadcast aviation weather and aeronautical information. In Alaska, FSS provide Airport Advisory Services.

(See FLIGHT PLAN AREA.)
(See TIE-IN FACILITY.)

FLIGHT STANDARDS DISTRICT OFFICE− An FAA field office serving an assigned geographical area and staffed with Flight Standards personnel who serve the aviation industry and the general public on matters relating to the certification and operation of air carrier and general aviation aircraft. Activities include general surveillance of operational safety, certification of airmen and aircraft, accident prevention, investigation, enforcement, etc.

FLIGHT TERMINATION− The intentional and deliberate process of terminating the flight of a UA in the event of an unrecoverable lost link, loss of_control, or other failure that compromises the safety of flight.

FLIGHT TEST− A flight for the purpose of:

a. Investigating the operation/flight characteristics of an aircraft or aircraft component.

b. Evaluating an applicant for a pilot certificate or rating.

FLIGHT VISIBILITY−
(See VISIBILITY.)

FLIP−
(See DoD FLIP.)

FLY-BY WAYPOINT− A fly-by waypoint requires the use of turn anticipation to avoid overshoot of the next flight segment.

FLY HEADING (DEGREES)− Informs the pilot of the heading he/she should fly. The pilot may have to turn to, or continue on, a specific compass direction in order to comply with the instructions. The pilot is expected to turn in the shorter direction to the heading unless otherwise instructed by ATC.

FLY-OVER WAYPOINT− A fly-over waypoint precludes any turn until the waypoint is overflown and is followed by an intercept maneuver of the next flight segment.

FLY VISUAL TO AIRPORT−
(See PUBLISHED INSTRUMENT APPROACH PROCEDURE VISUAL SEGMENT.)

FLYAWAY− When the pilot is unable to effect control of the aircraft and, as a result, the UA is not operating in a predictable or planned manner.

FMA−
(See FINAL MONITOR AID.)

FMS−
(See FLIGHT MANAGEMENT SYSTEM.)

FORMATION FLIGHT− More than one aircraft which, by prior arrangement between the pilots, operate as a single aircraft with regard to navigation and position reporting. Separation between aircraft within the formation is the responsibility of 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 and during join-up and breakaway.

a. A standard formation is one in which a proximity of no more than 1 mile laterally or longitudinally and within 100 feet vertically from the flight leader is maintained by each wingman.

b. Nonstandard formations are those operating under any of the following conditions:

1. When the flight leader has requested and ATC has approved other than standard formation dimensions.

2. When operating within an authorized altitude reservation (ALTRV) or under the provisions of a letter of agreement.

3. When the operations are conducted in airspace specifically designed for a special activity.

(See ALTITUDE RESERVATION.)
(Refer to 14 CFR Part 91.)

FRC–
(See REQUEST FULL ROUTE CLEARANCE.)

FREEZE/FROZEN– Terms used in referring to arrivals which have been assigned ACLTs and to the lists in which they are displayed.

FREEZE HORIZON– The time or point at which an aircraft's STA becomes fixed and no longer fluctuates with each radar update. This setting ensures a constant time for each aircraft, necessary for the metering controller to plan his/her delay technique. This setting can be either in distance from the meter fix or a prescribed flying time to the meter fix.

FREEZE SPEED PARAMETER– A speed adapted for each aircraft to determine fast and slow aircraft. Fast aircraft freeze on parameter FCLT and slow aircraft freeze on parameter MLDI.

FRIA–
(See FAA–RECOGNIZED IDENTIFICATION AREA.)

FRICTION MEASUREMENT– A measurement of the friction characteristics of the runway pavement surface using continuous self-watering friction measurement equipment in accordance with the specifications, procedures and schedules contained in AC 150/5320–12, Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces.

FSDO–
(See FLIGHT STANDARDS DISTRICT OFFICE.)

FSPD–
(See FREEZE SPEED PARAMETER.)

FSS–
(See FLIGHT SERVICE STATION.)

FUEL DUMPING– Airborne release of usable fuel. This does not include the dropping of fuel tanks.
(See JETTISONING OF EXTERNAL STORES.)

FUEL REMAINING– A phrase used by either pilots or controllers when relating to the fuel remaining on board until actual fuel exhaustion. When transmitting such information in response to either a controller question or pilot initiated cautionary advisory to air traffic control, pilots will state the APPROXIMATE NUMBER OF MINUTES the flight can continue with the fuel remaining. All reserve fuel SHOULD BE INCLUDED in the time stated, as should an allowance for established fuel gauge system error.

FUEL SIPHONING– Unintentional release of fuel caused by overflow, puncture, loose cap, etc.

FUEL VENTING–
(See FUEL SIPHONING.)

FUSED TARGET-
(See DIGITAL TARGET)

FUSION [STARS]- the combination of all available surveillance sources (airport surveillance radar [ASR], air route surveillance radar [ARSR], ADS-B, etc.) into the display of a single tracked target for air traffic control separation services. FUSION is the equivalent of the current single-sensor radar display. FUSION performance is characteristic of a single-sensor radar display system. Terminal areas use mono-pulse secondary surveillance radar (ASR 9, Mode S or ASR 11, MSSR).

G

GATE HOLD PROCEDURES− Procedures at selected airports to hold aircraft at the gate or other ground location whenever departure delays exceed or are anticipated to exceed 15 minutes. The sequence for departure will be maintained in accordance with initial call−up unless modified by flow control restrictions. Pilots should monitor the ground control/clearance delivery frequency for engine start/taxi advisories or new proposed start/taxi time if the delay changes.

GCA−
(See GROUND CONTROLLED APPROACH.)

GDP−
(See GROUND DELAY PROGRAM.)

GENERAL AVIATION− That portion of civil aviation that does not include scheduled or unscheduled air carriers or commercial space operations.
(See ICAO term GENERAL AVIATION.)

GENERAL AVIATION [ICAO]− All civil aviation operations other than scheduled air services and nonscheduled air transport operations for remuneration or hire.

GEO MAP− The digitized map markings associated with the ASR-9 Radar System.

GLIDEPATH−
(See GLIDESLOPE.)

GLIDEPATH [ICAO]− A descent profile determined for vertical guidance during a final approach.

GLIDEPATH INTERCEPT ALTITUDE−
(See GLIDESLOPE INTERCEPT ALTITUDE.)

GLIDESLOPE− Provides vertical guidance for aircraft during approach and landing. The glideslope/glidepath is based on the following:

a. Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS; or,

b. Visual ground aids, such as VASI, which provide vertical guidance for a VFR approach or for the visual portion of an instrument approach and landing.

c. PAR. Used by ATC to inform an aircraft making a PAR approach of its vertical position (elevation) relative to the descent profile.
(See ICAO term GLIDEPATH.)

GLIDESLOPE INTERCEPT ALTITUDE− The published minimum altitude to intercept the glideslope in the intermediate segment of an instrument approach. Government charts use the lightning bolt symbol to identify this intercept point. This intersection is called the Precise Final Approach fix (PFAF). ATC directs a higher altitude, the resultant intercept becomes the PFAF.
(See FINAL APPROACH FIX.)
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS)− GNSS refers collectively to the worldwide positioning, navigation, and timing determination capability available from one or more satellite constellations. A GNSS constellation may be augmented by ground stations and/or geostationary satellites to improve integrity and position accuracy.
(See GROUND−BASED AUGMENTATION SYSTEM.)
(See SATELLITE−BASED AUGMENTATION SYSTEM.)

GLOBAL NAVIGATION SATELLITE SYSTEM MINIMUM EN ROUTE IFR ALTITUDE (GNSS MEA)− The minimum en route IFR altitude on a published ATS route or route segment which assures acceptable Global Navigation Satellite System reception and meets obstacle clearance requirements.
(Refer to 14 CFR Part 91.)
(Refer to 14 CFR Part 95.)

GLOBAL POSITIONING SYSTEM (GPS)− GPS refers to the worldwide positioning, navigation and timing determination capability available from the U.S. satellite constellation. The service provided by GPS for civil use is defined in the GPS Standard Positioning System Performance Standard. GPS is composed of space, control, and user elements.

GNSS [ICAO]−
(See GLOBAL NAVIGATION SATELLITE SYSTEM.)

GNSS MEA−
(See GLOBAL NAVIGATION SATELLITE SYSTEM MINIMUM EN ROUTE IFR ALTITUDE.)

GO AHEAD− Proceed with your message. Not to be used for any other purpose.

GO AROUND− Instructions for a pilot to abandon his/her approach to landing. Additional instructions may follow. Unless otherwise advised by ATC, a VFR aircraft or an aircraft conducting visual approach should overfly the runway while climbing to traffic pattern altitude and enter the traffic pattern via the crosswind leg. A pilot on an IFR flight plan making an instrument approach should execute the published missed approach procedure or proceed as instructed by ATC; e.g., "Go around" (additional instructions if required).
(See LOW APPROACH.)
(See MISSED APPROACH.)

GPD−
(See GRAPHIC PLAN DISPLAY.)

GPS−
(See GLOBAL POSITIONING SYSTEM.)

GRAPHICAL AIRMEN'S METEOROLOGICAL INFORMATION− A graphical depiction of weather that may be hazardous to aircraft, but are less severe than SIGMETs. G−AIRMETS are issued 3 hours apart for a period of up to 12 hours into the future for the lower 48 states and coastal waters. The weather hazards depicted can be:

a. Moderate turbulence

b. Low-level windshear

c. Strong surface winds greater than 30 knots

d. Moderate icing

e. Freezing level

f. Mountain obscuration

g. IFR

(See AIRMET.)
(See CONVECTIVE SIGMET.)
(See CWA.)
(See SAW.)
(See SIGMET.)
(Refer to AIM.)

GRAPHIC PLAN DISPLAY (GPD)− A view available with EDST that provides a graphic display of aircraft, traffic, and notification of predicted conflicts. Graphic routes for Current Plans and Trial Plans are displayed upon controller request.
(See EN ROUTE DECISION SUPPORT TOOL.)

GROSS NAVIGATION ERROR (GNE) − A lateral deviation of 10 NM or more from the aircraft's cleared route.

GROUND BASED AUGMENTATION SYSTEM (GBAS)– A ground based GNSS station which provides local differential corrections, integrity parameters and approach data via VHF data broadcast to GNSS users to meet real-time performance requirements for CAT I precision approaches. The aircraft applies the broadcast data to improve the accuracy and integrity of its GNSS signals and computes the deviations to the selected approach. A single ground station can serve multiple runway ends up to an approximate radius of 23 NM.

GROUND BASED AUGMENTATION SYSTEM (GBAS) LANDING SYSTEM (GLS)- A type of precision IAP based on local augmentation of GNSS data using a single GBAS station to transmit locally corrected GNSS data, integrity parameters and approach information. This improves the accuracy of aircraft GNSS receivers' signal in space, enabling the pilot to fly a precision approach with much greater flexibility, reliability and complexity. The GLS procedure is published on standard IAP charts, features the title GLS with the designated runway and minima as low as 200 feet DA. Future plans are expected to support Cat II and CAT III operations.

GROUND−BASED INTERVAL MANAGEMENT−SPACING (GIM−S), SPEED ADVISORY− A calculated speed that will allow aircraft to meet the TBFM schedule at en route and TRACON boundary meter fixes.

GROUND CLUTTER− A pattern produced on the radar scope by ground returns which may degrade other radar returns in the affected area. The effect of ground clutter is minimized by the use of moving target indicator (MTI) circuits in the radar equipment resulting in a radar presentation which displays only targets which are in motion.

(See CLUTTER.)

GROUND COMMUNICATION OUTLET (GCO)− An unstaffed, remotely controlled, ground/ground communications facility. Pilots at uncontrolled airports may contact ATC and FSS via VHF radio to a telephone connection. If the connection goes to ATC, the pilot can obtain an IFR clearance or close an IFR flight plan. If the connection goes to Flight Service, the pilot can open or close a VFR flight plan; obtain an updated weather briefing prior to takeoff; close an IFR flight plan; or, for Alaska or MEDEVAC only, obtain an IFR clearance. Pilots will use four "key clicks" on the VHF radio to contact the appropriate ATC facility or six "key clicks" to contact the FSS. The GCO system is intended to be used only on the ground.

GROUND CONTROLLED APPROACH− A radar approach system operated from the ground by air traffic control personnel transmitting instructions to the pilot by radio. The approach may be conducted with surveillance radar (ASR) only or with both surveillance and precision approach radar (PAR). Usage of the term "GCA" by pilots is discouraged except when referring to a GCA facility. Pilots should specifically request a "PAR" approach when a precision radar approach is desired or request an "ASR" or "surveillance" approach when a nonprecision radar approach is desired.

(See RADAR APPROACH.)

GROUND DELAY PROGRAM (GDP)− A traffic management process administered by the ATCSCC, when aircraft are held on the ground. The purpose of the program is to support the TM mission and limit airborne holding. It is a flexible program and may be implemented in various forms depending upon the needs of the AT system. Ground delay programs provide for equitable assignment of delays to all system users.

GROUND SPEED− The speed of an aircraft relative to the surface of the earth.

GROUND STOP (GS)− The GS is a process that requires aircraft that meet a specific criteria to remain on the ground. The criteria may be airport specific, airspace specific, or equipment specific; for example, all departures to San Francisco, or all departures entering Yorktown sector, or all Category I and II aircraft going to Charlotte. GSs normally occur with little or no warning.

GROUND VISIBILITY−

(See VISIBILITY.)

GS−

(See GROUND STOP.)

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 MATERIALS (HAZMAT)− Hazardous materials as defined by 49 Code of Federal Regulations (CFR) §171.8.
(Refer to 49 CFR Part 171.8)
(Refer to AIM)

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), graphical airmen's meteorological information (G−AIRMET) 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.

HAZMAT−
(See HAZARDOUS MATERIALS.)

HEAVY (AIRCRAFT)−
(See AIRCRAFT CLASSES.)

HEIGHT ABOVE AIRPORT (HAA)− The height of the Minimum Descent Altitude above the published airport elevation. This is published in conjunction with circling minimums.
(See MINIMUM DESCENT ALTITUDE.)

HEIGHT ABOVE LANDING (HAL)− The height above a designated helicopter landing area used for helicopter instrument approach procedures.
(Refer to 14 CFR Part 97.)

HEIGHT ABOVE TOUCHDOWN (HAT)− The height of the Decision Height or Minimum Descent Altitude above the highest runway elevation in the touchdown zone (first 3,000 feet of the runway). HAT is published on instrument approach charts in conjunction with all straight-in minimums.
(See DECISION HEIGHT.)
(See MINIMUM DESCENT ALTITUDE.)

HELICOPTER− A heavier-than-air aircraft supported in flight chiefly by the reactions of the air on one or more power-driven rotors on substantially vertical axes.

HELIPAD− A small, designated area, usually with a prepared surface, on a heliport, airport, landing/takeoff area, apron/ramp, or movement area used for takeoff, landing, or parking of helicopters.

HELIPORT− An area of land, water, or structure used or intended to be used for the landing and takeoff of helicopters and includes its buildings and facilities if any.

HELIPORT REFERENCE POINT (HRP)− The geographic center of a heliport.

HERTZ− The standard radio equivalent of frequency in cycles per second of an electromagnetic wave. Kilohertz (kHz) is a frequency of one thousand cycles per second. Megahertz (MHz) is a frequency of one million cycles per second.

HF−
(See HIGH FREQUENCY.)

HF COMMUNICATIONS−
(See HIGH FREQUENCY COMMUNICATIONS.)

HIGH FREQUENCY− The frequency band between 3 and 30 MHz.
(See HIGH FREQUENCY COMMUNICATIONS.)

HIGH FREQUENCY COMMUNICATIONS− High radio frequencies (HF) between 3 and 30 MHz used for air-to-ground voice communication in overseas operations.

HIGH SPEED EXIT−
(See HIGH SPEED TAXIWAY.)

HIGH SPEED TAXIWAY− A long radius taxiway designed and provided with lighting or marking to define the path of aircraft, traveling at high speed (up to 60 knots), from the runway center to a point on the center of a taxiway. Also referred to as long radius exit or turn-off taxiway. The high speed taxiway is designed to expedite aircraft turning off the runway after landing, thus reducing runway occupancy time.

HIGH SPEED TURNOFF−
(See HIGH SPEED TAXIWAY.)

HIGH UPDATE RATE SURVEILLANCE– A surveillance system that provides a sensor update rate of less than 4.8 seconds.

HOLD FOR RELEASE− Used by ATC to delay an aircraft for traffic management reasons; i.e., weather, traffic volume, etc. Hold for release instructions (including departure delay information) are used to inform a pilot or a controller (either directly or through an authorized relay) that an IFR departure clearance is not valid until a release time or additional instructions have been received.
(See ICAO term HOLDING POINT.)

HOLD−IN−LIEU OF PROCEDURE TURN− A hold−in−lieu of procedure turn shall be established over a final or intermediate fix when an approach can be made from a properly aligned holding pattern. The hold−in−lieu of procedure turn permits the pilot to align with the final or intermediate segment of the approach and/or descend in the holding pattern to an altitude that will permit a normal descent to the final approach fix altitude. The hold−in−lieu of procedure turn is a required maneuver (the same as a procedure turn) unless the aircraft is being radar vectored to the final approach course, when "NoPT" is shown on the approach chart, or when the pilot requests or the controller advises the pilot to make a "straight−in" approach.

HOLD PROCEDURE− A predetermined maneuver which keeps aircraft within a specified airspace while awaiting further clearance from air traffic control. Also used during ground operations to keep aircraft within a specified area or at a specified point while awaiting further clearance from air traffic control.
(See HOLDING FIX.)
(Refer to AIM.)

HOLDING FIX− A specified fix identifiable to a pilot by NAVAIDs or visual reference to the ground used as a reference point in establishing and maintaining the position of an aircraft while holding.
(See FIX.)
(See VISUAL HOLDING.)
(Refer to AIM.)

HOLDING POINT [ICAO]− A specified location, identified by visual or other means, in the vicinity of which the position of an aircraft in flight is maintained in accordance with air traffic control clearances.

HOLDING PROCEDURE−
(See HOLD PROCEDURE.)

HOLD-SHORT POINT− A point on the runway beyond which a landing aircraft with a LAHSO clearance is not authorized to proceed. This point may be located prior to an intersecting runway, taxiway, predetermined point, or approach/departure flight path.

HOLD-SHORT POSITION LIGHTS− Flashing in-pavement white lights located at specified hold-short points.

HOLD-SHORT POSITION MARKING− The painted runway marking located at the hold-short point on all LAHSO runways.

HOLD-SHORT POSITION SIGNS− Red and white holding position signs located alongside the hold-short point.

HOMING− Flight toward a NAVAID, without correcting for wind, by adjusting the aircraft heading to maintain a relative bearing of zero degrees.
(See BEARING.)
(See ICAO term HOMING.)

HOMING [ICAO]− The procedure of using the direction-finding equipment of one radio station with the emission of another radio station, where at least one of the stations is mobile, and whereby the mobile station proceeds continuously towards the other station.

HOT SPOT− A location on an airport movement area with a history of potential risk of collision or runway incursion, and where heightened attention by pilots/drivers is necessary.

HOVER CHECK− Used to describe when a helicopter/VTOL aircraft requires a stabilized hover to conduct a performance/power check prior to hover taxi, air taxi, or takeoff. Altitude of the hover will vary based on the purpose of the check.

HOVER TAXI− Used to describe a helicopter/VTOL aircraft movement conducted above the surface and in ground effect at airspeeds less than approximately 20 knots. The actual height may vary, and some helicopters may require hover taxi above 25 feet AGL to reduce ground effect turbulence or provide clearance for cargo slingloads.
(See AIR TAXI.)
(See HOVER CHECK.)
(Refer to AIM.)

HOW DO YOU HEAR ME?− A question relating to the quality of the transmission or to determine how well the transmission is being received.

HZ−
(See HERTZ.)

I

***I SAY AGAIN*−** The message will be repeated.

IAF−

(See INITIAL APPROACH FIX.)

IAP−

(See INSTRUMENT APPROACH PROCEDURE.)

IAWP− Initial Approach Waypoint

ICAO−

(See ICAO Term INTERNATIONAL CIVIL AVIATION ORGANIZATION.)

ICAO 3LD−

(See ICAO Term ICAO Three−Letter Designator)

ICAO Three−Letter Designator (3LD)− An ICAO 3LD is an exclusive designator that, when used together with a flight number, becomes the aircraft call sign and provides distinct aircraft identification to air traffic control (ATC). ICAO approves 3LDs to enhance the safety and security of the air traffic system. An ICAO 3LD may be assigned to a company, agency, or organization and is used instead of the aircraft registration number for ATC operational and security purposes. An ICAO 3LD is also used for aircraft identification in the flight plan and associated messages and can be used for domestic and international flights. A telephony associated with an ICAO 3LD is used for radio communication.

ICING− The accumulation of airframe ice.

Types of icing are:

a. Rime Ice− Rough, milky, opaque ice formed by the instantaneous freezing of small supercooled water droplets.

b. Clear Ice− A glossy, clear, or translucent ice formed by the relatively slow freezing of large supercooled water droplets.

c. Mixed− A mixture of clear ice and rime ice.

Intensity of icing:

a. Trace− Ice becomes noticeable. The rate of accumulation is slightly greater than the rate of sublimation. A representative accretion rate for reference purposes is less than ¼ inch (6 mm) per hour on the outer wing. The pilot should consider exiting the icing conditions before they become worse.

b. Light− The rate of ice accumulation requires occasional cycling of manual deicing systems to minimize ice accretions on the airframe. A representative accretion rate for reference purposes is ¼ inch to 1 inch (0.6 to 2.5 cm) per hour on the unprotected part of the outer wing. The pilot should consider exiting the icing condition.

c. Moderate− The rate of ice accumulation requires frequent cycling of manual deicing systems to minimize ice accretions on the airframe. A representative accretion rate for reference purposes is 1 to 3 inches (2.5 to 7.5 cm) per hour on the unprotected part of the outer wing. The pilot should consider exiting the icing condition as soon as possible.

d. Severe− The rate of ice accumulation is such that ice protection systems fail to remove the accumulation of ice and ice accumulates in locations not normally prone to icing, such as areas aft of protected surfaces and any other areas identified by the manufacturer. A representative accretion rate for reference purposes is more than 3 inches (7.5 cm) per hour on the unprotected part of the outer wing. By regulation, immediate exit is required.

Note:

Severe icing is aircraft dependent, as are the other categories of icing intensity. Severe icing may occur at any ice accumulation rate when the icing rate or ice accumulations exceed the tolerance of the aircraft.

IDAC−
(See INTEGRATED DEPARTURE/ARRIVAL CAPABILITY.)

IDENT− A request for a pilot to activate the aircraft transponder identification feature. This will help the controller to confirm an aircraft identity or to identify an aircraft.
(Refer to AIM.)

IDENT FEATURE− The special feature in the Air Traffic Control Radar Beacon System (ATCRBS) equipment. It is used to immediately distinguish one displayed beacon target from other beacon targets.
(See IDENT.)

IDENTIFICATION [ICAO]− The situation which exists when the position indication of a particular aircraft is seen on a situation display and positively identified.

IF−
(See INTERMEDIATE FIX.)

IF NO TRANSMISSION RECEIVED FOR (TIME)− Used by ATC in radar approaches to prefix procedures which should be followed by the pilot in event of lost communications.
(See LOST COMMUNICATIONS.)

IFR−
(See INSTRUMENT FLIGHT RULES.)

IFR AIRCRAFT− An aircraft conducting flight in accordance with instrument flight rules.

IFR CONDITIONS− Weather conditions below the minimum for flight under visual flight rules.
(See INSTRUMENT METEOROLOGICAL CONDITIONS.)

IFR DEPARTURE PROCEDURE−
(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)
(Refer to AIM.)

IFR FLIGHT−
(See IFR AIRCRAFT.)

IFR LANDING MINIMUMS−
(See LANDING MINIMUMS.)

IFR MILITARY TRAINING ROUTES (IR)− Routes used by the Department of Defense and associated Reserve and Air Guard units for the purpose of conducting low-altitude navigation and tactical training in both IFR and VFR weather conditions below 10,000 feet MSL at airspeeds in excess of 250 knots IAS.

IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES− Title 14 Code of Federal Regulations Part 91, prescribes standard takeoff rules for certain civil users. At some airports, obstructions or other factors require the establishment of nonstandard takeoff minimums, departure procedures, or both to assist pilots in avoiding obstacles during climb to the minimum en route altitude. Those airports are listed in FAA/DoD Instrument Approach Procedures (IAPs) Charts under a section entitled "IFR Takeoff Minimums and Departure Procedures." The FAA/DoD IAP chart legend illustrates the symbol used to alert the pilot to nonstandard takeoff minimums and departure procedures. When departing IFR from such airports or from any airports where there are no departure procedures, DPs, or ATC facilities available, pilots should advise ATC of any departure limitations. Controllers may query a pilot to determine acceptable departure directions, turns, or headings after takeoff. Pilots should be familiar with the departure procedures and must assure that their aircraft can meet or exceed any specified climb gradients.

IF/IAWP− Intermediate Fix/Initial Approach Waypoint. The waypoint where the final approach course of a T approach meets the crossbar of the T. When designated (in conjunction with a TAA) this waypoint will be used as an IAWP when approaching the airport from certain directions, and as an IFWP when beginning the approach from another IAWP.

IFWP− Intermediate Fix Waypoint

ILS−
(See INSTRUMENT LANDING SYSTEM.)

ILS CATEGORIES− 1. Category I. An ILS approach procedure which provides for approach to a height above touchdown of not less than 200 feet and with runway visual range of not less than 1,800 feet.− 2. Special Authorization Category I. An ILS approach procedure which provides for approach to a height above touchdown of not less than 150 feet and with runway visual range of not less than 1,400 feet, HUD to DH. 3. Category II. An ILS approach procedure which provides for approach to a height above touchdown of not less than 100 feet and with runway visual range of not less than 1,200 feet (with autoland or HUD to touchdown and noted on authorization, RVR 1,000 feet).− 4. Special Authorization Category II with Reduced Lighting. An ILS approach procedure which provides for approach to a height above touchdown of not less than 100 feet and with runway visual range of not less than 1,200 feet with autoland or HUD to touchdown and noted on authorization (no touchdown zone and centerline lighting are required).− 5. Category III:

a. IIIA.−An ILS approach procedure which provides for approach without a decision height minimum and with runway visual range of not less than 700 feet.

b. IIIB.−An ILS approach procedure which provides for approach without a decision height minimum and with runway visual range of not less than 150 feet.

c. IIIC.−An ILS approach procedure which provides for approach without a decision height minimum and without runway visual range minimum.

IM−
(See INNER MARKER.)

IMC−
(See INSTRUMENT METEOROLOGICAL CONDITIONS.)

IMMEDIATELY− Used by ATC or pilots when such action compliance is required to avoid an imminent situation.

INCERFA (Uncertainty Phase) [ICAO]− A situation wherein uncertainty exists as to the safety of an aircraft and its occupants.

INCREASED SEPARATION REQUIRED (ISR)– Indicates the confidence level of the track requires 5 NM separation. 3 NM separation, 1 ½ NM separation, and target resolution cannot be used.

INCREASE SPEED TO (SPEED)−
(See SPEED ADJUSTMENT.)

INERTIAL NAVIGATION SYSTEM (INS)− An RNAV system which is a form of self-contained navigation.
(See Area Navigation/RNAV.)

INFLIGHT REFUELING−
(See AERIAL REFUELING.)

INFLIGHT SERVICES [FSS]– Services provided to or affecting aircraft inflight or otherwise operating on the airport surface. This includes services to airborne aircraft, such as the delivery of ATC clearances, advisories or requests, issuance of military flight advisory messages, NOTAM delivery, search and rescue communications searches, flight plan handling, transcribed or live broadcasts, weather observations, PIREPs, and pilot briefings.

INFLIGHT WEATHER ADVISORY−
(See WEATHER ADVISORY.)

INFORMATION REQUEST (INREQ)− A request originated by an FSS for information concerning an overdue VFR aircraft.

INITIAL APPROACH FIX (IAF)− The fixes depicted on instrument approach procedure charts that identify the beginning of the initial approach segment(s).
(See FIX.)
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

INITIAL APPROACH SEGMENT−
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

INITIAL APPROACH SEGMENT [ICAO]− That segment of an instrument approach procedure between the initial approach fix and the intermediate approach fix or, where applicable, the final approach fix or point.

INLAND NAVIGATION FACILITY− A navigation aid on a North American Route at which the common route and/or the noncommon route begins or ends.

INNER MARKER− A marker beacon used with an ILS (CAT II) precision approach located between the middle marker and the end of the ILS runway, transmitting a radiation pattern keyed at six dots per second and indicating to the pilot, both aurally and visually, that he/she is at the designated decision height (DH), normally 100 feet above the touchdown zone elevation, on the ILS CAT II approach. It also marks progress during a CAT III approach.
(See INSTRUMENT LANDING SYSTEM.)
(Refer to AIM.)

INNER MARKER BEACON−
(See INNER MARKER.)

INREQ−
(See INFORMATION REQUEST.)

INS−
(See INERTIAL NAVIGATION SYSTEM.)

INSTRUMENT APPROACH−
(See INSTRUMENT APPROACH PROCEDURE.)

INSTRUMENT APPROACH OPERATIONS [ICAO]− An approach and landing using instruments for navigation guidance based on an instrument approach procedure. There are two methods for executing instrument approach operations:

a. A two−dimensional (2D) instrument approach operation, using lateral navigation guidance only; and

b. A three−dimensional (3D) instrument approach operation, using both lateral and vertical navigation guidance.

Note: Lateral and vertical navigation guidance refers to the guidance provided either by:
a) a ground−based radio navigation aid; or
b) computer−generated navigation data from ground−based, space−based, self−contained navigation aids or a combination of these.

(See ICAO term INSTRUMENT APPROACH PROCEDURE.)

INSTRUMENT APPROACH PROCEDURE− A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or to a point from which a landing may be made visually. It is prescribed and approved for a specific airport by competent authority.
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

a. U.S. civil standard instrument approach procedures are approved by the FAA as prescribed under 14 CFR Part 97 and are available for public use.

b. U.S. military standard instrument approach procedures are approved and published by the Department of Defense.

c. Special instrument approach procedures are approved by the FAA for individual operators but are not published in 14 CFR Part 97 for public use.
(See ICAO term INSTRUMENT APPROACH PROCEDURE.)

INSTRUMENT APPROACH PROCEDURE [ICAO]− A series of predetermined maneuvers by reference to flight instruments with specified protection from obstacles from the initial approach fix, or where applicable, from the beginning of a defined arrival route to a point from which a landing can be completed and thereafter, if a landing is not completed, to a position at which holding or en route obstacle clearance criteria apply.
(See ICAO term INSTRUMENT APPROACH OPERATIONS)

INSTRUMENT APPROACH PROCEDURE CHARTS−
(See AERONAUTICAL CHART.)

INSTRUMENT DEPARTURE PROCEDURE (DP)− A preplanned instrument flight rule (IFR) departure procedure published for pilot use, in graphic or textual format, that provides obstruction clearance from the terminal area to the appropriate en route structure. There are two types of DP, Obstacle Departure Procedure (ODP), printed either textually or graphically, and, Standard Instrument Departure (SID), which is always printed graphically.
(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)
(See OBSTACLE DEPARTURE PROCEDURES.)
(See STANDARD INSTRUMENT DEPARTURES.)
(Refer to AIM.)

INSTRUMENT DEPARTURE PROCEDURE (DP) CHARTS−
(See AERONAUTICAL CHART.)

INSTRUMENT FLIGHT RULES (IFR)− Rules governing the procedures for conducting instrument flight. Also a term used by pilots and controllers to indicate type of flight plan.
(See INSTRUMENT METEOROLOGICAL CONDITIONS.)
(See VISUAL FLIGHT RULES.)
(See VISUAL METEOROLOGICAL CONDITIONS.)
(See ICAO term INSTRUMENT FLIGHT RULES.)
(Refer to AIM.)

INSTRUMENT FLIGHT RULES [ICAO]− A set of rules governing the conduct of flight under instrument meteorological conditions.

INSTRUMENT LANDING SYSTEM (ILS)− A precision instrument approach system which normally consists of the following electronic components and visual aids:

a. Localizer.
(See LOCALIZER.)

b. Glideslope.
(See GLIDESLOPE.)

c. Outer Marker.
(See OUTER MARKER.)

d. Middle Marker.
(See MIDDLE MARKER.)

e. Approach Lights.
(See AIRPORT LIGHTING.)
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

INSTRUMENT METEOROLOGICAL CONDITIONS (IMC)− Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling less than the minima specified for visual meteorological conditions.
(See INSTRUMENT FLIGHT RULES.)
(See VISUAL FLIGHT RULES.)
(See VISUAL METEOROLOGICAL CONDITIONS.)

INSTRUMENT RUNWAY− A runway equipped with electronic and visual navigation aids for which a precision or nonprecision approach procedure having straight-in landing minimums has been approved.
(See ICAO term INSTRUMENT RUNWAY.)

INSTRUMENT RUNWAY [ICAO]− One of the following types of runways intended for the operation of aircraft using instrument approach procedures:

a. Nonprecision Approach Runway− An instrument runway served by visual aids and a nonvisual aid providing at least directional guidance adequate for a straight-in approach.

b. Precision Approach Runway, Category I− An instrument runway served by ILS and visual aids intended for operations down to 60 m (200 feet) decision height and down to an RVR of the order of 800 m.

c. Precision Approach Runway, Category II− An instrument runway served by ILS and visual aids intended for operations down to 30 m (100 feet) decision height and down to an RVR of the order of 400 m.

d. Precision Approach Runway, Category III− An instrument runway served by ILS to and along the surface of the runway and:

1. Intended for operations down to an RVR of the order of 200 m (no decision height being applicable) using visual aids during the final phase of landing;

2. Intended for operations down to an RVR of the order of 50 m (no decision height being applicable) using visual aids for taxiing;

3. Intended for operations without reliance on visual reference for landing or taxiing.

Note 1: See Annex 10 Volume I, Part I, Chapter 3, for related ILS specifications.

Note 2: Visual aids need not necessarily be matched to the scale of nonvisual aids provided. The criterion for the selection of visual aids is the conditions in which operations are intended to be conducted.

INTEGRATED DEPARTURE/ARRIVAL CAPABILITY (IDAC)− A Tower/TRACON departure scheduling capability within TBFM that allows departures to be scheduled into either an arrival flow or an en route flow. IDAC provides a mechanism for electronic coordination of departure release times.

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 NOTICE− 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.

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.)

J

JAMMING− Denotes emissions that do not mimic Global Navigation Satellite System (GNSS) signals (e.g., GPS and WAAS), but rather interfere with the civil receiver's ability to acquire and track GNSS signals. Jamming can result in denial of GNSS navigation, positioning, timing and aircraft dependent functions.

JET BLAST− The rapid air movement produced by exhaust from jet engines.

JET ROUTE− A route designed to serve aircraft operations from 18,000 feet MSL up to and including flight level 450. The routes are referred to as "J" routes with numbering to identify the designated route; e.g., J105.

(See Class A AIRSPACE.)
(Refer to 14 CFR Part 71.)

JET STREAM− A migrating stream of high-speed winds present at high altitudes.

JETTISONING OF EXTERNAL STORES− Airborne release of external stores; e.g., tiptanks, ordnance.

(See FUEL DUMPING.)
(Refer to 14 CFR Part 91.)

JOINT USE RESTRICTED AREA−

(See RESTRICTED AREA.)

JUMP ZONE− The airspace directly associated with a Drop Zone. Vertical and horizontal limits may be locally defined.

K

KNOWN TRAFFIC− With respect to ATC clearances, means aircraft whose altitude, position, and intentions are known to ATC.

L

LAA−
(See LOCAL AIRPORT ADVISORY.)

LAANC−
(See LOW ALTITUDE AUTHORIZATION AND NOTIFICATION CAPABILITY.)

LAHSO− An acronym for “Land and Hold Short Operation.” These operations include landing and holding short of an intersecting runway, a taxiway, a predetermined point, or an approach/departure flightpath.

LAHSO-DRY− Land and hold short operations on runways that are dry.

LAHSO-WET− Land and hold short operations on runways that are wet (but not contaminated).

LAND AND HOLD SHORT OPERATIONS− Operations which include simultaneous takeoffs and landings and/or simultaneous landings when a landing aircraft is able and is instructed by the controller to hold-short of the intersecting runway/taxiway or designated hold-short point. Pilots are expected to promptly inform the controller if the hold short clearance cannot be accepted.
(See PARALLEL RUNWAYS.)
(Refer to AIM.)

LAND−BASED AIR DEFENSE IDENTIFICATION ZONE (ADIZ)− An ADIZ over U.S. metropolitan areas, which is activated and deactivated as needed, with dimensions, activation dates, and other relevant information disseminated via NOTAM.
(See AIR DEFENSE IDENTIFICATION ZONE.)

LANDING AREA− Any locality either on land, water, or structures, including airports/heliports and intermediate landing fields, which is used, or intended to be used, for the landing and takeoff of aircraft whether or not facilities are provided for the shelter, servicing, or for receiving or discharging passengers or cargo.
(See ICAO term LANDING AREA.)

LANDING AREA [ICAO]− That part of a movement area intended for the landing or take-off of aircraft.

LANDING DIRECTION INDICATOR− A device which visually indicates the direction in which landings and takeoffs should be made.
(See TETRAHEDRON.)
(Refer to AIM.)

LANDING DISTANCE AVAILABLE (LDA)− The runway length declared available and suitable for a landing airplane.
(See ICAO term LANDING DISTANCE AVAILABLE.)

LANDING DISTANCE AVAILABLE [ICAO]− The length of runway which is declared available and suitable for the ground run of an aeroplane landing.

LANDING MINIMUMS− The minimum visibility prescribed for landing a civil aircraft while using an instrument approach procedure. The minimum applies with other limitations set forth in 14 CFR Part 91 with respect to the Minimum Descent Altitude (MDA) or Decision Height (DH) prescribed in the instrument approach procedures as follows:

a. Straight-in landing minimums. A statement of MDA and visibility, or DH and visibility, required for a straight-in landing on a specified runway, or

b. Circling minimums. A statement of MDA and visibility required for the circle-to-land maneuver.

Note: Descent below the MDA or DH must meet the conditions stated in 14 CFR Section 91.175.
(See CIRCLE-TO-LAND MANEUVER.)
(See DECISION HEIGHT.)
(See INSTRUMENT APPROACH PROCEDURE.)
(See MINIMUM DESCENT ALTITUDE.)
(See STRAIGHT-IN LANDING.)
(See VISIBILITY.)
(Refer to 14 CFR Part 91.)

LANDING ROLL− The distance from the point of touchdown to the point where the aircraft can be brought to a stop or exit the runway.

LANDING SEQUENCE− The order in which aircraft are positioned for landing.
(See APPROACH SEQUENCE.)

LAST ASSIGNED ALTITUDE− The last altitude/flight level assigned by ATC and acknowledged by the pilot.
(See MAINTAIN.)
(Refer to 14 CFR Part 91.)

LATERAL NAVIGATION (LNAV)– A function of area navigation (RNAV) equipment which calculates, displays, and provides lateral guidance to a profile or path.

LATERAL SEPARATION− The lateral spacing of aircraft at the same altitude by requiring operation on different routes or in different geographical locations.
(See SEPARATION.)

LDA−
(See LOCALIZER TYPE DIRECTIONAL AID.)
(See LANDING DISTANCE AVAILABLE.)
(See ICAO Term LANDING DISTANCE AVAILABLE.)

LF−
(See LOW FREQUENCY.)

LIGHTED AIRPORT− An airport where runway and obstruction lighting is available.
(See AIRPORT LIGHTING.)
(Refer to AIM.)

LIGHT GUN− A handheld directional light signaling device which emits a brilliant narrow beam of white, green, or red light as selected by the tower controller. The color and type of light transmitted can be used to approve or disapprove anticipated pilot actions where radio communication is not available. The light gun is used for controlling traffic operating in the vicinity of the airport and on the airport movement area.
(Refer to AIM.)

LIGHT-SPORT AIRCRAFT (LSA)− An FAA-registered aircraft, other than a helicopter or powered-lift, that meets certain weight and performance. Principally it is a single−engine aircraft with a maximum of two seats and weighing no more than 1,430 pounds if intended for operation on water, or 1,320 pounds if not. It must be of simple design (fixed landing gear (except if intended for operations on water or a glider), piston powered, nonpressurized, with a fixed or ground adjustable propeller). Performance is also limited to a maximum airspeed in level flight of not more than 120 knots calibrated airspeed (CAS), have a maximum never-exceed speed of not more than 120 knots CAS for a glider, and have a maximum stalling speed, without the use of lift-enhancing devices of not more than 45 knots CAS. It may be certificated as either Experimental LSA or as a Special LSA aircraft. A minimum of a sport pilot certificate is required to operate light-sport aircraft.
(Refer to 14 CFR Part 1, §1.1.)

LINE UP AND WAIT (LUAW)− Used by ATC to inform a pilot to taxi onto the departure runway to line up and wait. It is not authorization for takeoff. It is used when takeoff clearance cannot immediately be issued because of traffic or other reasons.
(See CLEARED FOR TAKEOFF.)

LOCAL AIRPORT ADVISORY (LAA)− A service available only in Alaska and provided by facilities that are located on the landing airport, have a discrete ground−to−air communication frequency or the tower frequency when the tower is closed, automated weather reporting with voice broadcasting, and a continuous ASOS/AWOS data display, other continuous direct reading instruments, or manual observations available to the specialist.
(See AIRPORT ADVISORY AREA.)

LOCAL TRAFFIC− Aircraft operating in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from flight in local practice areas, or aircraft executing practice instrument approaches at the airport.
(See TRAFFIC PATTERN.)

LOCALIZER− The component of an ILS which provides course guidance to the runway.
(See INSTRUMENT LANDING SYSTEM.)
(See ICAO term LOCALIZER COURSE.)
(Refer to AIM.)

LOCALIZER COURSE [ICAO]− The locus of points, in any given horizontal plane, at which the DDM (difference in depth of modulation) is zero.

LOCALIZER OFFSET− An angular offset of the localizer aligned within 3° of the runway alignment.

LOCALIZER TYPE DIRECTIONAL AID (LDA)− A localizer with an angular offset that exceeds 3° of the runway alignment, used for nonprecision instrument approaches with utility and accuracy comparable to a localizer, but which are not part of a complete ILS.
(Refer to AIM.)

LOCALIZER TYPE DIRECTIONAL AID (LDA) PRECISION RUNWAY MONITOR (PRM) APPROACH− An approach, which includes a glideslope, used in conjunction with an ILS PRM, RNAV PRM or GLS PRM approach to an adjacent runway to conduct Simultaneous Offset Instrument Approaches (SOIA) to parallel runways whose centerlines are separated by less than 3,000 feet and at least 750 feet. NTZ monitoring is required to conduct these approaches.
(See SIMULTANEOUS OFFSET INSTRUMENT APPROACH (SOIA).)
(Refer to AIM)

LOCALIZER USABLE DISTANCE− The maximum distance from the localizer transmitter at a specified altitude, as verified by flight inspection, at which reliable course information is continuously received.
(Refer to AIM.)

LOCATOR [ICAO]− An LM/MF NDB used as an aid to final approach.
Note: A locator usually has an average radius of rated coverage of between 18.5 and 46.3 km (10 and 25 NM).

LONG RANGE NAVIGATION−
(See LORAN.)

LONGITUDINAL SEPARATION− The longitudinal spacing of aircraft at the same altitude by a minimum distance expressed in units of time or miles.
(See SEPARATION.)
(Refer to AIM.)

LORAN− An electronic navigational system by which hyperbolic lines of position are determined by measuring the difference in the time of reception of synchronized pulse signals from two fixed transmitters. Loran A operates in the 1750-1950 kHz frequency band. Loran C and D operate in the 100-110 kHz frequency band. In 2010, the U.S. Coast Guard terminated all U.S. LORAN-C transmissions.
(Refer to AIM.)

LOST COMMUNICATIONS− Loss of the ability to communicate by radio. Aircraft are sometimes referred to as NORDO (No Radio). Standard pilot procedures are specified in 14 CFR Part 91. Radar controllers issue procedures for pilots to follow in the event of lost communications during a radar approach when weather reports indicate that an aircraft will likely encounter IFR weather conditions during the approach.

(Refer to 14 CFR Part 91.)
(Refer to AIM.)

LOST LINK (LL)− An interruption or loss of the control link, or when the pilot is unable to effect control of the aircraft and, as a result, the UA will perform a predictable or planned maneuver. Loss of command and control link between the Control Station and the aircraft. There are two types of links:

a. An uplink which transmits command instructions to the aircraft, and

b. A downlink which transmits the status of the aircraft and provides situational awareness to the pilot.

LOST LINK PROCEDURE− Preprogrammed or predetermined mitigations to ensure the continued safe operation of the UA in the event of a lost link (LL). In the event positive link cannot be established, flight termination must be implemented.

LOW ALTITUDE AIRWAY STRUCTURE− The network of airways serving aircraft operations up to but not including 18,000 feet MSL.

(See AIRWAY.)
(Refer to AIM.)

LOW ALTITUDE ALERT, CHECK YOUR ALTITUDE IMMEDIATELY−

(See SAFETY ALERT.)

LOW ALTITUDE AUTHORIZATION AND NOTIFICATION CAPABILITY (LAANC)− FAA and industry collaboration which automates the process of obtaining a required authorization for operations in controlled airspace.

LOW APPROACH− An approach over an airport or runway following an instrument approach or a VFR approach including the go-around maneuver where the pilot intentionally does not make contact with the runway.

(Refer to AIM.)

LOW FREQUENCY (LF)− The frequency band between 30 and 300 kHz.

(Refer to AIM.)

LOCALIZER PERFORMANCE WITH VERTICAL GUIDANCE (LPV)− A type of approach with vertical guidance (APV) based on WAAS, published on RNAV (GPS) approach charts. This procedure takes advantage of the precise lateral guidance available from WAAS. The minima is published as a decision altitude (DA).

LUAW−

(See LINE UP AND WAIT.)

M

MAA−
(See MAXIMUM AUTHORIZED ALTITUDE.)

MACH NUMBER− The ratio of true airspeed to the speed of sound; e.g., MACH .82, MACH 1.6.
(See AIRSPEED.)

MACH TECHNIQUE [ICAO]− Describes a control technique used by air traffic control whereby turbojet aircraft operating successively along suitable routes are cleared to maintain appropriate MACH numbers for a relevant portion of the en route phase of flight. The principal objective is to achieve improved utilization of the airspace and to ensure that separation between successive aircraft does not decrease below the established minima.

MAHWP− Missed Approach Holding Waypoint

MAINTAIN−

a. Concerning altitude/flight level, the term means to remain at the altitude/flight level specified. The phrase "climb and" or "descend and" normally precedes "maintain" and the altitude assignment; e.g., "descend and maintain 5,000."

b. Concerning other ATC instructions, the term is used in its literal sense; e.g., maintain VFR.

MAINTENANCE PLANNING FRICTION LEVEL− The friction level specified in AC 150/5320-12, Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces, which represents the friction value below which the runway pavement surface remains acceptable for any category or class of aircraft operations but which is beginning to show signs of deterioration. This value will vary depending on the particular friction measurement equipment used.

MAKE SHORT APPROACH− Used by ATC to inform a pilot to alter his/her traffic pattern so as to make a short final approach.
(See TRAFFIC PATTERN.)

MAN PORTABLE AIR DEFENSE SYSTEMS (MANPADS)− MANPADS are lightweight, shoulder−launched, missile systems used to bring down aircraft and create mass casualties. The potential for MANPADS use against airborne aircraft is real and requires familiarity with the subject. Terrorists choose MANPADS because the weapons are low cost, highly mobile, require minimal set−up time, and are easy to use and maintain. Although the weapons have limited range, and their accuracy is affected by poor visibility and adverse weather, they can be fired from anywhere on land or from boats where there is unrestricted visibility to the target.

MANDATORY ALTITUDE− An altitude depicted on an instrument Approach Procedure Chart requiring the aircraft to maintain altitude at the depicted value.

MANPADS−
(See MAN PORTABLE AIR DEFENSE SYSTEMS.)

MAP−
(See MISSED APPROACH POINT.)

MARKER BEACON− An electronic navigation facility transmitting a 75 MHz vertical fan or boneshaped radiation pattern. Marker beacons are identified by their modulation frequency and keying code, and when received by compatible airborne equipment, indicate to the pilot, both aurally and visually, that he/she is passing over the facility.
(See INNER MARKER.)
(See MIDDLE MARKER.)
(See OUTER MARKER.)
(Refer to AIM.)

MARSA−
(See MILITARY AUTHORITY ASSUMES RESPONSIBILITY FOR SEPARATION OF AIRCRAFT.)

MAWP− Missed Approach Waypoint

MAXIMUM AUTHORIZED ALTITUDE− A published altitude representing the maximum usable altitude or flight level for an airspace structure or route segment. It is the highest altitude on a Federal airway, jet route, area navigation low or high route, or other direct route for which an MEA is designated in 14 CFR Part 95 at which adequate reception of navigation aid signals is assured.

MAXIMUM GROSS OPERATING WEIGHT (MGOW)− The maximum gross weight of an aircraft, including fuel and any external objects, at any point during the flight.

MAYDAY− The international radiotelephony distress signal. When repeated three times, it indicates imminent and grave danger and that immediate assistance is requested.
(See PAN-PAN.)
(Refer to AIM.)

MCA−
(See MINIMUM CROSSING ALTITUDE.)

MDA−
(See MINIMUM DESCENT ALTITUDE.)

MEA−
(See MINIMUM EN ROUTE IFR ALTITUDE.)

MEARTS−
(See MICRO-EN ROUTE AUTOMATED RADAR TRACKING SYSTEM.)

METEOROLOGICAL IMPACT STATEMENT− An unscheduled planning forecast describing conditions expected to begin within 4 to 12 hours which may impact the flow of air traffic in a specific center's (ARTCC) area.

METER FIX ARC− A semicircle, equidistant from a meter fix, usually in low altitude relatively close to the meter fix, used to help TBFM/ERAM calculate a meter time, and determine appropriate sector meter list assignments for aircraft not on an established arrival route or assigned a meter fix.

METER REFERENCE ELEMENT (MRE)− A constraint point through which traffic flows are managed. An MRE can be the runway threshold, a meter fix, or a meter arc.

METER REFERENCE POINT LIST (MRP)− A list of TBFM delay information conveyed to the controller on the situation display via the Meter Reference Point View, commonly known as the "Meter List."

METERING−A method of time−regulating traffic flows in the en route and terminal environments.

METERING AIRPORTS− Airports adapted for metering and for which optimum flight paths are defined. A maximum of 15 airports may be adapted.

METERING FIX− A fix along an established route from over which aircraft will be metered prior to entering terminal airspace. Normally, this fix should be established at a distance from the airport which will facilitate a profile descent 10,000 feet above airport elevation (AAE) or above.

MGOW−
(See MAXIMUM GROSS OPERATING WEIGHT.)

MHA−
(See MINIMUM HOLDING ALTITUDE.)

MIA−
(See MINIMUM IFR ALTITUDES.)

MICROBURST− A small downburst with outbursts of damaging winds extending 2.5 miles or less. In spite of its small horizontal scale, an intense microburst could induce wind speeds as high as 150 knots

(Refer to AIM.)

MICRO-EN ROUTE AUTOMATED RADAR TRACKING SYSTEM (MEARTS)− An automated radar and radar beacon tracking system capable of employing both short-range (ASR) and long-range (ARSR) radars. This microcomputer driven system provides improved tracking, continuous data recording, and use of full digital radar displays.

MID RVR−

(See VISIBILITY.)

MIDDLE COMPASS LOCATOR−

(See COMPASS LOCATOR.)

MIDDLE MARKER− A marker beacon that defines a point along the glideslope of an ILS normally located at or near the point of decision height (ILS Category I). It is keyed to transmit alternate dots and dashes, with the alternate dots and dashes keyed at the rate of 95 dot/dash combinations per minute on a 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 Safe Altitude (MSA) specified in 14 CFR Part 91 for various aircraft operations.

b. Altitudes depicted on approach charts or departure procedure (DP) graphic charts which provide at least 1,000 feet of obstacle clearance for emergency use. These altitudes will be identified as Minimum Safe Altitudes or Emergency Safe Altitudes and are established as follows:

1. Minimum Safe Altitude (MSA). Altitudes depicted on approach charts or on a DP graphic chart which provide at least 1,000 feet of obstacle clearance within a 25−mile radius of the navigation facility, waypoint, or airport reference point upon which the MSA is predicated. MSAs are for emergency use only and do not necessarily assure acceptable navigational signal coverage.

(See ICAO term Minimum Sector Altitude.)

2. Emergency Safe Altitude (ESA). Altitudes depicted on approach charts which provide at least 1,000 feet of obstacle clearance in nonmountainous areas and 2,000 feet of obstacle clearance in designated mountainous areas within a 100-mile radius of the navigation facility or waypoint used as the ESA center. These altitudes are normally used only in military procedures and are identified on published procedures as "Emergency Safe Altitudes."

MINIMUM SAFE ALTITUDE WARNING (MSAW)− A function of the EAS and STARS computer that aids the controller by alerting him/her when a tracked Mode C equipped aircraft is below or is predicted by the computer to go below a predetermined minimum safe altitude.
(Refer to AIM.)

MINIMUM SECTOR ALTITUDE [ICAO]− The lowest altitude which may be used under emergency conditions which will provide a minimum clearance of 300 m (1,000 feet) above all obstacles located in an area contained within a sector of a circle of 46 km (25 NM) radius centered on a radio aid to navigation.

MINIMUMS− Weather condition requirements established for a particular operation or type of operation; e.g., IFR takeoff or landing, alternate airport for IFR flight plans, VFR flight, etc.
(See IFR CONDITIONS.)
(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)
(See LANDING MINIMUMS.)
(See VFR CONDITIONS.)
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

MINIMUM VECTORING ALTITUDE (MVA)− The lowest MSL altitude at which an IFR aircraft will be vectored by a radar controller, except as otherwise authorized for radar approaches, departures, and missed approaches. The altitude meets IFR obstacle clearance criteria. It may be lower than the published MEA along an airway or J-route segment. It may be utilized for radar vectoring only upon the controller's determination that an adequate radar return is being received from the aircraft being controlled. Charts depicting minimum vectoring altitudes are normally available only to the controllers and not to pilots.
(Refer to AIM.)

MINUTES-IN-TRAIL− A specified interval between aircraft expressed in time. This method would more likely be utilized regardless of altitude.

MIS−
(See METEOROLOGICAL IMPACT STATEMENT.)

MISSED APPROACH−

a. A maneuver conducted by a pilot when an instrument approach cannot be completed to a landing. The route of flight and altitude are shown on instrument approach procedure charts. A pilot executing a missed approach prior to the Missed Approach Point (MAP) must continue along the final approach to the MAP.

b. A term used by the pilot to inform ATC that he/she is executing the missed approach.

c. At locations where ATC radar service is provided, the pilot should conform to radar vectors when provided by ATC in lieu of the published missed approach procedure.
(See MISSED APPROACH POINT.)
(Refer to AIM.)

MISSED APPROACH POINT (MAP)− A point prescribed in each instrument approach procedure at which a missed approach procedure shall be executed if the required visual reference does not exist.
(See MISSED APPROACH.)
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

MISSED APPROACH PROCEDURE [ICAO]− The procedure to be followed if the approach cannot be continued.

MISSED APPROACH SEGMENT−
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

MM−
(See MIDDLE MARKER.)

MOA−
(See MILITARY OPERATIONS AREA.)

MOCA−
(See MINIMUM OBSTRUCTION CLEARANCE ALTITUDE.)

MODE− The letter or number assigned to a specific pulse spacing of radio signals transmitted or received by ground interrogator or airborne transponder components of the Air Traffic Control Radar Beacon System (ATCRBS). Mode A (military Mode 3) and Mode C (altitude reporting) are used in air traffic control.
(See INTERROGATOR.)
(See RADAR.)
(See TRANSPONDER.)
(See ICAO term MODE.)
(Refer to AIM.)

MODE (SSR MODE) [ICAO]− The letter or number assigned to a specific pulse spacing of the interrogation signals transmitted by an interrogator. There are 4 modes, A, B, C and D specified in Annex 10, corresponding to four different interrogation pulse spacings.

MODE C INTRUDER ALERT− A function of certain air traffic control automated systems designed to alert radar controllers to existing or pending situations between a tracked target (known IFR or VFR aircraft) and an untracked target (unknown IFR or VFR aircraft) that requires immediate attention/action.
(See CONFLICT ALERT.)

MODEL AIRCRAFT− An unmanned aircraft that is: (1) capable of sustained flight in the atmosphere; (2) flown within visual line of sight of the person operating the aircraft; and (3) flown for hobby or recreational purposes.

MONITOR− (When used with communication transfer) listen on a specific frequency and stand by for instructions. Under normal circumstances do not establish communications.

MONITOR ALERT (MA)− A function of the TFMS that provides traffic management personnel with a tool for predicting potential capacity problems in individual operational sectors. The MA is an indication that traffic management personnel need to analyze a particular sector for actual activity and to determine the required action(s), if any, needed to control the demand.

MONITOR ALERT PARAMETER (MAP)− The number designated for use in monitor alert processing by the TFMS. The MAP is designated for each operational sector for increments of 15 minutes.

MOSAIC/MULTI−SENSOR MODE− Accepts positional data from multiple approved surveillance sources. Targets are displayed from a single source according to the hierarchy of the sources assigned in a given geographic area.

MOUNTAIN WAVE– Mountain waves occur when air is being blown over a mountain range or even the ridge of a sharp bluff area. As the air hits the upwind side of the range, it starts to climb, thus creating what is generally a smooth updraft which turns into a turbulent downdraft as the air passes the crest of the ridge. Mountain waves can cause significant fluctuations in airspeed and altitude with or without associated turbulence.
(Refer to AIM.)

MOVEMENT AREA− The runways, taxiways, and other areas of an airport/heliport which are utilized for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports/heliports with a tower, specific approval for entry onto the movement area must be obtained from ATC.
(See ICAO term MOVEMENT AREA.)

MOVEMENT AREA [ICAO]− That part of an aerodrome to be used for the takeoff, landing and taxiing of aircraft, consisting of the maneuvering area and the apron(s).

MOVING AIRSPACE RESERVATION− The term used in oceanic ATC for airspace that encompasses oceanic activities and advances with the mission progress; i.e., the reservation moves with the aircraft or flight.
(See MOVING ALTITUDE RESERVATION.)

MOVING ALTITUDE RESERVATION− An altitude reservation which encompasses en route activities and advances with the mission progress; i.e., the reservation moves with the aircraft or flight.

MOVING TARGET INDICATOR− An electronic device which will permit radar scope presentation only from targets which are in motion. A partial remedy for ground clutter.

MRA−
(See MINIMUM RECEPTION ALTITUDE.)

MRE−
(See METER REFERENCE ELEMENT.)

MRP
(See METER REFERENCE POINT LIST.)

MSA−
(See MINIMUM SAFE ALTITUDE.)

MSAW−
(See MINIMUM SAFE ALTITUDE WARNING.)

MTI−
(See MOVING TARGET INDICATOR.)

MTR−
(See MILITARY TRAINING ROUTES.)

MULTICOM− A mobile service not open to public correspondence used to provide communications essential to conduct the activities being performed by or directed from private aircraft.

MULTIPLE RUNWAYS− The utilization of a dedicated arrival runway(s) for departures and a dedicated departure runway(s) for arrivals when feasible to reduce delays and enhance capacity.

MVA−
(See MINIMUM VECTORING ALTITUDE.)

N

NAS−
(See NATIONAL AIRSPACE SYSTEM.)

NAT HLA–
(See NORTH ATLANTIC HIGH LEVEL AIRSPACE.)

NATIONAL AIRSPACE SYSTEM− The common network of U.S. airspace; air navigation facilities, equipment and services, airports or landing areas; aeronautical charts, information and services; rules, regulations and procedures, technical information, and manpower and material. Included are system components shared jointly with the military.

NATIONAL BEACON CODE ALLOCATION PLAN AIRSPACE (NBCAP)− Airspace over United States territory located within the North American continent between Canada and Mexico, including adjacent territorial waters outward to about boundaries of oceanic control areas (CTA)/Flight Information Regions (FIR).
(See FLIGHT INFORMATION REGION.)

NATIONAL FLIGHT DATA DIGEST (NFDD)− A daily (except weekends and Federal holidays) publication of flight information appropriate to aeronautical charts, aeronautical publications, Notices to Air Missions, or other media serving the purpose of providing operational flight data essential to safe and efficient aircraft operations.

NATIONAL SEARCH AND RESCUE PLAN− An interagency agreement which provides for the effective utilization of all available facilities in all types of search and rescue missions.

NATIONAL SECURITY AREA (NSA)–
(See SPECIAL USE AIRSPACE.)

NAVAID−
(See NAVIGATIONAL AID.)

NAVAID CLASSES− VOR, VORTAC, and TACAN aids are classed according to their operational use. The three classes of NAVAIDs are:

a. T− Terminal.

b. L− Low altitude.

c. H− High altitude.

Note: The normal service range for T, L, and H class aids is found in the AIM. Certain operational requirements make it necessary to use some of these aids at greater service ranges than specified. Extended range is made possible through flight inspection determinations. Some aids also have lesser service range due to location, terrain, frequency protection, etc. Restrictions to service range are listed in the Chart Supplement.

NAVIGABLE AIRSPACE− Airspace at and above the minimum flight altitudes prescribed in the CFRs including airspace needed for safe takeoff and landing.
(Refer to 14 CFR Part 91.)

NAVIGATION REFERENCE SYSTEM (NRS)− The NRS is a system of waypoints developed for use within the United States for flight planning and navigation without reference to ground based navigational aids. The NRS waypoints are located in a grid pattern along defined latitude and longitude lines. The initial use of the NRS will be in the high altitude environment. The NRS waypoints are intended for use by aircraft capable of point−to−point navigation.

NAVIGATION SPECIFICATION [ICAO]− A set of aircraft and flight crew requirements needed to support performance−based navigation operations within a defined airspace. There are two kinds of navigation specifications:

a. RNP specification. A navigation specification based on area navigation that includes the requirement for performance monitoring and alerting, designated by the prefix RNP; e.g., RNP 4, RNP APCH.

b. RNAV specification. A navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV; e.g., RNAV 5, RNAV 1.

Note: The Performance−based Navigation Manual (Doc 9613), Volume II contains detailed guidance on navigation specifications.

NAVIGATIONAL AID− Any visual or electronic device airborne or on the surface which provides point-to-point guidance information or position data to aircraft in flight.

(See AIR NAVIGATION FACILITY.)

NAVSPEC-

(See NAVIGATION SPECIFICATION [ICAO].)

NBCAP AIRSPACE−

(See NATIONAL BEACON CODE ALLOCATION PLAN AIRSPACE.)

NDB−

(See NONDIRECTIONAL BEACON.)

NEGATIVE− "No," or "permission not granted," or "that is not correct."

NEGATIVE CONTACT− Used by pilots to inform ATC that:

a. Previously issued traffic is not in sight. It may be followed by the pilot's request for the controller to provide assistance in avoiding the traffic.

b. They were unable to contact ATC on a particular frequency.

NFDD−

(See NATIONAL FLIGHT DATA DIGEST.)

NIGHT− The time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the Air Almanac, converted to local time.

(See ICAO term NIGHT.)

NIGHT [ICAO]− The hours between the end of evening civil twilight and the beginning of morning civil twilight or such other period between sunset and sunrise as may be specified by the appropriate authority.

Note: Civil twilight ends in the evening when the center of the sun's disk is 6 degrees below the horizon and begins in the morning when the center of the sun's disk is 6 degrees below the horizon.

NO GYRO APPROACH− A radar approach/vector provided in case of a malfunctioning gyro-compass or directional gyro. Instead of providing the pilot with headings to be flown, the controller observes the radar track and issues control instructions "turn right/left" or "stop turn" as appropriate.

(Refer to AIM.)

NO GYRO VECTOR−

(See NO GYRO APPROACH.)

NO TRANSGRESSION ZONE (NTZ)− The NTZ is a 2,000 foot wide zone, located equidistant between parallel runway or SOIA final approach courses, in which flight is normally not allowed.

NONAPPROACH CONTROL TOWER− Author-izes aircraft to land or takeoff at the airport controlled by the tower or to transit the Class D airspace. The primary function of a nonapproach control tower is the sequencing of aircraft in the traffic pattern and on the landing area. Nonapproach control towers also separate aircraft operating under instrument flight rules clearances from approach controls and centers. They provide ground control services to aircraft, vehicles, personnel, and equipment on the airport movement area.

NONCOMMON ROUTE/PORTION− That segment of a North American Route between the inland navigation facility and a designated North American terminal.

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 AIR MISSIONS.)

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 AIR MISSIONS (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.

a. 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.

b. 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.)

O

OBSTACLE− An existing object, object of natural growth, or terrain at a fixed geographical location or which may be expected at a fixed location within a prescribed area with reference to which vertical clearance is or must be provided during flight operation.

OBSTACLE DEPARTURE PROCEDURE (ODP)− A preplanned instrument flight rule (IFR) departure procedure printed for pilot use in textual or graphic form to provide obstruction clearance via the least onerous route from the terminal area to the appropriate en route structure. ODPs are recommended for obstruction clearance and may be flown without ATC clearance unless an alternate departure procedure (SID or radar vector) has been specifically assigned by ATC.

(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)
(See STANDARD INSTRUMENT DEPARTURES.)
(Refer to AIM.)

OBSTACLE FREE ZONE− The OFZ is a three−dimensional volume of airspace which protects the transition of aircraft to and from the runway. The OFZ clearing standard precludes taxiing and parked airplanes and object penetrations, except for frangible NAVAID locations that are fixed by function. Additionally, vehicles, equipment, and personnel may be authorized by air traffic control to enter the area using the provisions of FAA Order JO 7110.65, paragraph 3−1−5, Vehicles/Equipment/Personnel Near/On Runways. The runway OFZ and when applicable, the inner-approach OFZ, and the inner-transitional OFZ, comprise the OFZ.

a. Runway OFZ. The runway OFZ is a defined volume of airspace centered above the runway. The runway OFZ is the airspace above a surface whose elevation at any point is the same as the elevation of the nearest point on the runway centerline. The runway OFZ extends 200 feet beyond each end of the runway. The width is as follows:

1. For runways serving large airplanes, the greater of:

(a) 400 feet, or

(b) 180 feet, plus the wingspan of the most demanding airplane, plus 20 feet per 1,000 feet of airport elevation.

2. For runways serving only small airplanes:

(a) 300 feet for precision instrument runways.

(b) 250 feet for other runways serving small airplanes with approach speeds of 50 knots, or more.

(c) 120 feet for other runways serving small airplanes with approach speeds of less than 50 knots.

b. Inner-approach OFZ. The inner-approach OFZ is a defined volume of airspace centered on the approach area. The inner-approach OFZ applies only to runways with an approach lighting system. The inner-approach OFZ begins 200 feet from the runway threshold at the same elevation as the runway threshold and extends 200 feet beyond the last light unit in the approach lighting system. The width of the inner-approach OFZ is the same as the runway OFZ and rises at a slope of 50 (horizontal) to 1 (vertical) from the beginning.

c. Inner-transitional OFZ. The inner transitional surface OFZ is a defined volume of airspace along the sides of the runway and inner-approach OFZ and applies only to precision instrument runways. The inner-transitional surface OFZ slopes 3 (horizontal) to 1 (vertical) out from the edges of the runway OFZ and inner-approach OFZ to a height of 150 feet above the established airport elevation.

(Refer to AC 150/5300-13, Chapter 3.)
(Refer to FAA Order JO 7110.65, Para 3−1−5, Vehicles/Equipment/Personnel Near/On Runways.)

OBSTRUCTION− Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, Subpart C.

OBSTRUCTION LIGHT− A light or one of a group of lights, usually red or white, frequently mounted on a surface structure or natural terrain to warn pilots of the presence of an obstruction.

OCEANIC AIRSPACE− Airspace over the oceans of the world, considered international airspace, where oceanic separation and procedures per the International Civil Aviation Organization are applied. Responsibility for the provisions of air traffic control service in this airspace is delegated to various countries, based generally upon geographic proximity and the availability of the required resources.

OCEANIC ERROR REPORT− A report filed when ATC observes an Oceanic Error as defined by FAA Order JO 7210.632, Air Traffic Organization Occurrence Reporting.

OCEANIC PUBLISHED ROUTE− A route established in international airspace and charted or described in flight information publications, such as Route Charts, DoD En route Charts, Chart Supplements, NOTAMs, and Track Messages.

OCEANIC TRANSITION ROUTE− An ATS route established for the purpose of transitioning aircraft to/from an organized track system.

ODP−
(See OBSTACLE DEPARTURE PROCEDURE.)

OFF COURSE− A term used to describe a situation where an aircraft has reported a position fix or is observed on radar at a point not on the ATC-approved route of flight.

OFF−ROUTE OBSTRUCTION CLEARANCE ALTITUDE (OROCA)− A published altitude which provides terrain and obstruction clearance with a 1,000 foot buffer in non−mountainous areas and a 2,000 foot buffer in designated mountainous areas within the United States, and a 3,000 foot buffer outside the US ADIZ. These altitudes are not assessed for NAVAID signal coverage, air traffic control surveillance, or communications coverage, and are published for general situational awareness, flight planning, and in−flight contingency use.

OFF-ROUTE VECTOR− A vector by ATC which takes an aircraft off a previously assigned route. Altitudes assigned by ATC during such vectors provide required obstacle clearance.

OFFSET PARALLEL RUNWAYS− Staggered runways having centerlines which are parallel.

OFFSHORE/CONTROL AIRSPACE AREA− That portion of airspace between the U.S. 12 NM limit and the oceanic CTA/FIR boundary within which air traffic control is exercised. These areas are established to provide air traffic control services. Offshore/Control Airspace Areas may be classified as either Class A airspace or Class E airspace.

OFT−
(See OUTER FIX TIME.)

OM−
(See OUTER MARKER.)

ON COURSE−

a. Used to indicate that an aircraft is established on the route centerline.

b. Used by ATC to advise a pilot making a radar approach that his/her aircraft is lined up on the final approach course.

(See ON-COURSE INDICATION.)

ON-COURSE INDICATION− An indication on an instrument, which provides the pilot a visual means of determining that the aircraft is located on the centerline of a given navigational track, or an indication on a radar scope that an aircraft is on a given track.

ONE-MINUTE WEATHER− The most recent one minute updated weather broadcast received by a pilot from an uncontrolled airport ASOS/AWOS.

ONER−
(See OCEANIC NAVIGATIONAL ERROR REPORT.)

OOP−
(See OPERATIONS OVER PEOPLE.)

OPEN LOOP CLEARANCE− Provides a lateral vector solution that does not include a return to route point.

OPERATIONAL−
(See DUE REGARD.)

OPERATIONS OVER PEOPLE (OOP)− Operations of small unmanned aircraft over people.
(Refer to 14 CFR Part 107)

OPERATIONS SPECIFICATIONS [ICAO]− The authorizations, conditions and limitations associated with the air operator certificate and subject to the conditions in the operations manual.

OPERATOR (UAS)− The owner and/or remote pilot of a UAS.

OPPOSITE DIRECTION AIRCRAFT− Aircraft are operating in opposite directions when:

a. They are following the same track in reciprocal directions; or

b. Their tracks are parallel and the aircraft are flying in reciprocal directions; or

c. Their tracks intersect at an angle of more than 135°.

OPTION APPROACH− An approach requested and conducted by a pilot which will result in either a touch-and-go, missed approach, low approach, stop-and-go, or full stop landing. Pilots should advise ATC if they decide to remain on the runway, of any delay in their stop and go, delay clearing the runway, or are unable to comply with the instruction(s).
(See CLEARED FOR THE OPTION.)
(Refer to AIM.)

ORGANIZED TRACK SYSTEM− A series of ATS routes which are fixed and charted; i.e., CEP, NOPAC, or flexible and described by NOTAM; i.e., NAT TRACK MESSAGE.

OTR−
(See OCEANIC TRANSITION ROUTE.)

OTS−
(See ORGANIZED TRACK SYSTEM.)

OUT− The conversation is ended and no response is expected.

OUT OF SERVICE/UNSERVICEABLE (U/S)− When a piece of equipment, a NAVAID, a facility or a service is not operational, certified (if required) and immediately “available” for Air Traffic or public use.

OUTER AREA (associated with Class C airspace)− Non−regulatory airspace surrounding designated Class C airspace airports wherein ATC provides radar vectoring and sequencing on a full-time basis for all IFR and participating VFR aircraft. The service provided in the outer area is called Class C service which includes: IFR/IFR−IFR separation; IFR/VFR−traffic advisories and conflict resolution; and VFR/VFR−traffic advisories and, as appropriate, safety alerts. The normal radius will be 20 nautical miles with some variations based on site-specific requirements. The outer area extends outward from the primary Class C airspace airport and extends from the lower limits of radar/radio coverage up to the ceiling of the approach control’s delegated airspace excluding the Class C charted area and other airspace as appropriate.
(See CONFLICT RESOLUTION.)
(See CONTROLLED AIRSPACE.)

OUTER COMPASS LOCATOR−
(See COMPASS LOCATOR.)

OUTER FIX− A general term used within ATC to describe fixes in the terminal area, other than the final approach fix. Aircraft are normally cleared to these fixes by an Air Route Traffic Control Center or an Approach Control Facility. Aircraft are normally cleared from these fixes to the final approach fix or final approach course.

OR

OUTER FIX− An adapted fix along the converted route of flight, prior to the meter fix, for which crossing times are calculated and displayed in the metering position list.

OUTER FIX ARC− A semicircle, usually about a 50−70 mile radius from a meter fix, usually in high altitude, which is used by CTAS/ERAM to calculate outer fix times and determine appropriate sector meter list assignments for aircraft on an established arrival route that will traverse the arc.

OUTER FIX TIME− A calculated time to depart the outer fix in order to cross the vertex at the ACLT. The time reflects descent speed adjustments and any applicable delay time that must be absorbed prior to crossing the meter fix.

OUTER MARKER− A marker beacon at or near the glideslope intercept altitude of an ILS approach. It is keyed to transmit two dashes per second on a 400 Hz tone, which is received aurally and visually by compatible airborne equipment. The OM is normally located four to seven miles from the runway threshold on the extended centerline of the runway.

(See INSTRUMENT LANDING SYSTEM.)
(See MARKER BEACON.)
(Refer to AIM.)

OVER− My transmission is ended; I expect a response.

OVERHEAD MANEUVER− A series of predetermined maneuvers prescribed for aircraft (often in formation) for entry into the visual flight rules (VFR) traffic pattern and to proceed to a landing. An overhead maneuver is not an instrument flight rules (IFR) approach procedure. An aircraft executing an overhead maneuver is considered VFR and the IFR flight plan is canceled when the aircraft reaches the "initial point" on the initial approach portion of the maneuver. The pattern usually specifies the following:

a. The radio contact required of the pilot.

b. The speed to be maintained.

c. An initial approach 3 to 5 miles in length.

d. An elliptical pattern consisting of two 180 degree turns.

e. A break point at which the first 180 degree turn is started.

f. The direction of turns.

g. Altitude (at least 500 feet above the conventional pattern).

h. A "Roll-out" on final approach not less than 1/4 mile from the landing threshold and not less than 300 feet above the ground.

OVERLYING CENTER− The ARTCC facility that is responsible for arrival/departure operations at a specific terminal.

P

P TIME−
(See PROPOSED DEPARTURE TIME.)

P-ACP−
(See PREARRANGED COORDINATION PROCEDURES.)

PAN-PAN− The international radio-telephony urgency signal. When repeated three times, indicates uncertainty or alert followed by the nature of the urgency.
(See MAYDAY.)
(Refer to AIM.)

PAO−
(See PUBLIC AIRCRAFT OPERATION.)

PAR−
(See PRECISION APPROACH RADAR.)

PAR [ICAO]−
(See ICAO Term PRECISION APPROACH RADAR.)

PARALLEL ILS APPROACHES− Approaches to parallel runways by IFR aircraft which, when established inbound toward the airport on the adjacent final approach courses, are radar-separated by at least 2 miles.
(See FINAL APPROACH COURSE.)
(See SIMULTANEOUS ILS APPROACHES.)

PARALLEL OFFSET ROUTE− A parallel track to the left or right of the designated or established airway/route. Normally associated with Area Navigation (RNAV) operations.
(See AREA NAVIGATION.)

PARALLEL RUNWAYS− Two or more runways at the same airport whose centerlines are parallel. In addition to runway number, parallel runways are designated as L (left) and R (right) or, if three parallel runways exist, L (left), C (center), and R (right).

PBCT−
(See PROPOSED BOUNDARY CROSSING TIME.)

PBN−
(See ICAO Term PERFORMANCE−BASED NAVIGATION.)

PDC−
(See PRE−DEPARTURE CLEARANCE.)

PDRR−
(See PRE−DEPARTURE REROUTE.)

PERFORMANCE−BASED NAVIGATION (PBN) [ICAO]− Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace.

Note: Performance requirements are expressed in navigation specifications (RNAV specification, RNP specification) in terms of accuracy, integrity, continuity, availability, and functionality needed for the proposed operation in the context of a particular airspace concept.

PERMANENT ECHO− Radar signals reflected from fixed objects on the earth's surface; e.g., buildings, towers, terrain. Permanent echoes are distinguished from "ground clutter" by being definable locations rather than large areas. Under certain conditions they may be used to check radar alignment.

PERTI−
(See PLAN, EXECUTE, REVIEW, TRAIN, IMPROVE.)

PGUI−
(See PLANVIEW GRAPHICAL USER INTERFACE.)

PHOTO RECONNAISSANCE− Military activity that requires locating individual photo targets and navigating to the targets at a preplanned angle and altitude. The activity normally requires a lateral route width of 16 NM and altitude range of 1,500 feet to 10,000 feet AGL.

PILOT BRIEFING− The gathering, translation, interpretation, and summarization of weather and aeronautical information into a form usable by the pilot or flight supervisory personnel to assist in flight planning and decision−making for the safe and efficient operation of aircraft. These briefings may include, but are not limited to, weather observations, forecasts, and aeronautical information (for example, NOTAMs, military activities, flow control information, and temporary flight restrictions [TFR]).
(Refer to AIM.)

PILOT IN COMMAND− The pilot responsible for the operation and safety of an aircraft during flight time.
(Refer to 14 CFR Part 91.)

PILOT WEATHER REPORT− A report of meteorological phenomena encountered by aircraft in flight.
(Refer to AIM.)

PILOT'S DISCRETION− When used in conjunction with altitude assignments, means that ATC has offered the pilot the option of starting climb or descent whenever he/she wishes and conducting the climb or descent at any rate he/she wishes. He/she may temporarily level off at any intermediate altitude. However, once he/she has vacated an altitude, he/she may not return to that altitude.

PIREP−
(See PILOT WEATHER REPORT.)

PITCH POINT− A fix/waypoint that serves as a transition point from a departure procedure or the low altitude ground−based navigation structure into the high altitude waypoint system.

PLAN, EXECUTE, REVIEW, TRAIN, IMPROVE (PERTI)− A process that delivers a one−day detailed plan for NAS operations, and a two−day outlook, which sets NAS performance goals for high impact constraints. PLAN: Increase lead time for identifying aviation system constraint planning and goals while utilizing historical NAS performance data and constraints to derive successful and/or improved advance planning strategies. EXECUTE: Set goals and a strategy. The Air Traffic Control System Command Center (ATCSCC), FAA field facilities, and aviation stakeholders execute the strategy and work to achieve the desired/planned outcomes. REVIEW: Utilize post event analysis and lessons learned to define and implement future strategies and operational triggers based on past performance and outcomes, both positive and negative. TRAIN: Develop training that includes rapid and continuous feedback to operational personnel and provides increased data and weather knowledge and tools for analytical usage and planning. IMPROVE: Implement better information sharing processes, technologies, and procedures that improve the skills and technology needed to implement operational insights and improvements.

PLANS DISPLAY− A display available in EDST that provides detailed flight plan and predicted conflict information in textual format for requested Current Plans and all Trial Plans.
(See EN ROUTE DECISION SUPPORT TOOL)

PLANVIEW GRAPHICAL USER INTERFACE (PGUI)− A TBFM display that provides a spatial display of individual aircraft track information.

POFZ−
(See PRECISION OBSTACLE FREE ZONE.)

POINT OUT−
(See RADAR POINT OUT.)

POINT−TO−POINT (PTP)− A level of NRR service for aircraft that is based on traditional waypoints in their FMSs or RNAV equipage.

POLAR TRACK STRUCTURE− A system of organized routes between Iceland and Alaska which overlie Canadian MNPS Airspace.

POSITION REPORT− A report over a known location as transmitted by an aircraft to ATC.
(Refer to AIM.)

POSITION SYMBOL− A computer-generated indication shown on a radar display to indicate the mode of tracking.

POSITIVE CONTROL− The separation of all air traffic within designated airspace by air traffic control.

PRACTICE INSTRUMENT APPROACH− An instrument approach procedure conducted by a VFR or an IFR aircraft for the purpose of pilot training or proficiency demonstrations.

PRE−DEPARTURE CLEARANCE− An application with the Terminal Data Link System (TDLS) that provides clearance information to subscribers, through a service provider, in text to the cockpit or gate printer.

PRE−DEPARTURE REROUTE (PDRR)− A capability within the Traffic Flow Management System that enables ATC to quickly amend and execute revised departure clearances that mitigate en route constraints or balance en route traffic flows.

PREARRANGED COORDINATION− A standardized procedure which permits an air traffic controller to enter the airspace assigned to another air traffic controller without verbal coordination. The procedures are defined in a facility directive which ensures approved separation between aircraft.

PREARRANGED COORDINATION PROCEDURES− A facility's standardized procedure that describes the process by which one controller shall allow an aircraft to penetrate or transit another controller's airspace in a manner that assures approved separation without individual coordination for each aircraft.

PRECIPITATION− Any or all forms of water particles (rain, sleet, hail, or snow) that fall from the atmosphere and reach the surface.

PRECIPITATION RADAR WEATHER DESCRIPTIONS− Existing radar systems cannot detect turbulence. However, there is a direct correlation between the degree of turbulence and other weather features associated with thunderstorms and the weather radar precipitation intensity. Controllers will issue (where capable) precipitation intensity as observed by radar when using weather and radar processor (WARP) or NAS ground−based digital radars with weather capabilities. When precipitation intensity information is not available, the intensity will be described as UNKNOWN. When intensity levels can be determined, they shall be described as:

a. LIGHT (< 26 dBZ)

b. MODERATE (26 to 40 dBZ)

c. HEAVY (> 40 to 50 dBZ)

d. EXTREME (> 50 dBZ)

(Refer to the Aviation Weather Handbook, FAA−H−8083−28.)

PRECISION APPROACH−
(See PRECISION APPROACH PROCEDURE.)

PRECISION APPROACH PROCEDURE− A standard instrument approach procedure in which an electronic glideslope or other type of glidepath is provided; e.g., ILS, PAR, and GLS.
(See INSTRUMENT LANDING SYSTEM.)
(See PRECISION APPROACH RADAR.)

PRECISION APPROACH RADAR− Radar equipment in some ATC facilities operated by the FAA and/or the military services at joint-use civil/military locations and separate military installations to detect and display azimuth, elevation, and range of aircraft on the final approach course to a runway. This equipment may be used

to monitor certain nonradar approaches, but is primarily used to conduct a precision instrument approach (PAR) wherein the controller issues guidance instructions to the pilot based on the aircraft's position in relation to the final approach course (azimuth), the glidepath (elevation), and the distance (range) from the touchdown point on the runway as displayed on the radar scope.
(See GLIDEPATH.)
(See PAR.)
(See ICAO term PRECISION APPROACH RADAR.)
(Refer to AIM.)

PRECISION APPROACH RADAR [ICAO]− Primary radar equipment used to determine the position of an aircraft during final approach, in terms of lateral and vertical deviations relative to a nominal approach path, and in range relative to touchdown.

PRECISION OBSTACLE FREE ZONE (POFZ)− An 800 foot wide by 200 foot long area centered on the runway centerline adjacent to the threshold designed to protect aircraft flying precision approaches from ground vehicles and other aircraft when ceiling is less than 250 feet or visibility is less than 3/4 statute mile (or runway visual range below 4,000 feet.)

PRECISION RUNWAY MONITOR (PRM) SYSTEM− Provides air traffic controllers monitoring the NTZ during simultaneous close parallel PRM approaches with precision, high update rate secondary surveillance data. The high update rate surveillance sensor component of the PRM system is only required for specific runway or approach course separation. The high resolution color monitoring display, Final Monitor Aid (FMA) of the PRM system, or other FMA with the same capability, presents NTZ surveillance track data to controllers along with detailed maps depicting approaches and no transgression zone and is required for all simultaneous close parallel PRM NTZ monitoring operations.
(Refer to AIM.)

PREDICTIVE WIND SHEAR ALERT SYSTEM (PWS)− A self−contained system used on board some aircraft to alert the flight crew to the presence of a potential wind shear. PWS systems typically monitor 3 miles ahead and 25 degrees left and right of the aircraft's heading at or below 1200' AGL. Departing flights may receive a wind shear alert after they start the takeoff roll and may elect to abort the takeoff. Aircraft on approach receiving an alert may elect to go around or perform a wind shear escape maneuver.

PREFERRED IFR ROUTES− Routes established between busier airports to increase system efficiency and capacity. They normally extend through one or more ARTCC areas and are designed to achieve balanced traffic flows among high density terminals. IFR clearances are issued on the basis of these routes except when severe weather avoidance procedures or other factors dictate otherwise. Preferred IFR Routes are listed in the Chart Supplement U.S., and are also available at https://www.fly.faa.gov/rmt/nfdc_preferred_routes_database.jsp. If a flight is planned to or from an area having such routes but the departure or arrival point is not listed in the Chart Supplement U.S., pilots may use that part of a Preferred IFR Route which is appropriate for the departure or arrival point that is listed. Preferred IFR Routes may be defined by DPs, SIDs, or STARs; NAVAIDs, Waypoints, etc.; high or low altitude airways; or any combinations thereof. Because they often share elements with adapted routes, pilots' use of preferred IFR routes can minimize flight plan route amendments.
(See ADAPTED ROUTES.)
(See CENTER'S AREA.)
(See INSTRUMENT APPROACH PROCEDURE.)
(See INSTRUMENT DEPARTURE PROCEDURE.)
(See STANDARD TERMINAL ARRIVAL.)
(Refer to CHART SUPPLEMENT U.S.)

PRE-FLIGHT PILOT BRIEFING−
(See PILOT BRIEFING.)

PREVAILING VISIBILITY−
(See VISIBILITY.)

PRIMARY RADAR TARGET− An analog or digital target, exclusive of a secondary radar target, presented on a radar display.

PRM−

(See AREA NAVIGATION (RNAV) GLOBAL POSITIONING SYSTEM (GPS) PRECISION RUNWAY MONITORING (PRM) APPROACH.)
(See PRM APPROACH.)
(See PRECISION RUNWAY MONITOR SYSTEM.)

PRM APPROACH− An instrument approach procedure titled ILS PRM, RNAV PRM, LDA PRM, or GLS PRM conducted to parallel runways separated by less than 4,300 feet and at least 3,000 feet where independent closely spaced approaches are permitted. Use of an enhanced display with alerting, a No Transgression Zone (NTZ), secondary monitor frequency, pilot PRM training, and publication of an Attention All Users Page are required for all PRM approaches. Depending on the runway spacing, the approach courses may be parallel or one approach course must be offset. PRM procedures are also used to conduct Simultaneous Offset Instrument Approach (SOIA) operations. In SOIA, one straight−in ILS PRM, RNAV PRM, GLS PRM, and one offset LDA PRM, RNAV PRM or GLS PRM approach are utilized. PRM procedures are terminated and a visual segment begins at the offset approach missed approach point where the minimum distance between the approach courses is 3000 feet. Runway spacing can be as close as 750 feet.

(Refer to AIM.)

PROCEDURAL CONTROL [ICAO]– Term used to indicate that information derived from an ATS surveillance system is not required for the provision of air traffic control service.

PROCEDURAL SEPARATION [ICAO]– The separation used when providing procedural control.

PROCEDURE TURN− The maneuver prescribed when it is necessary to reverse direction to establish an aircraft on the intermediate approach segment or final approach course. The outbound course, direction of turn, distance within which the turn must be completed, and minimum altitude are specified in the procedure. However, unless otherwise restricted, the point at which the turn may be commenced and the type and rate of turn are left to the discretion of the pilot.

(See ICAO term PROCEDURE TURN.)

PROCEDURE TURN [ICAO]− A maneuver in which a turn is made away from a designated track followed by a turn in the opposite direction to permit the aircraft to intercept and proceed along the reciprocal of the designated track.

Note 1: Procedure turns are designated "left" or "right" according to the direction of the initial turn.

Note 2: Procedure turns may be designated as being made either in level flight or while descending, according to the circumstances of each individual approach procedure.

PROCEDURE TURN INBOUND− That point of a procedure turn maneuver where course reversal has been completed and an aircraft is established inbound on the intermediate approach segment or final approach course. A report of "procedure turn inbound" is normally used by ATC as a position report for separation purposes.

(See FINAL APPROACH COURSE.)
(See PROCEDURE TURN.)
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

PROFILE DESCENT− An uninterrupted descent (except where level flight is required for speed adjustment; e.g., 250 knots at 10,000 feet MSL) from cruising altitude/level to interception of a glideslope or to a minimum altitude specified for the initial or intermediate approach segment of a nonprecision instrument approach. The profile descent normally terminates at the approach gate or where the glideslope or other appropriate minimum altitude is intercepted.

PROGRESS REPORT−

(See POSITION REPORT.)

PROGRESSIVE TAXI− Precise taxi instructions given to a pilot unfamiliar with the airport or issued in stages as the aircraft proceeds along the taxi route.

PROHIBITED AREA−
(See SPECIAL USE AIRSPACE.)
(See ICAO term PROHIBITED AREA.)

PROHIBITED AREA [ICAO]− An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited.

PROMINENT OBSTACLE– An obstacle that meets one or more of the following conditions:

a. An obstacle which stands out beyond the adjacent surface of surrounding terrain and immediately projects a noticeable hazard to aircraft in flight.

b. An obstacle, not characterized as low and close in, whose height is no less than 300 feet above the departure end of takeoff runway (DER) elevation, is within 10 NM from the DER, and that penetrates that airport/heliport's diverse departure obstacle clearance surface (OCS).

c. An obstacle beyond 10 NM from an airport/heliport that requires an obstacle departure procedure (ODP) to ensure obstacle avoidance.
(See OBSTACLE.)
(See OBSTRUCTION.)

PROPELLER (PROP) WASH (PROP BLAST)− The disturbed mass of air generated by the motion of a propeller.

PROPOSED BOUNDARY CROSSING TIME− Each center has a PBCT parameter for each internal airport. Proposed internal flight plans are transmitted to the adjacent center if the flight time along the proposed route from the departure airport to the center boundary is less than or equal to the value of PBCT or if airport adaptation specifies transmission regardless of PBCT.

PROPOSED DEPARTURE TIME− The time that the aircraft expects to become airborne.

PROTECTED AIRSPACE− The airspace on either side of an oceanic route/track that is equal to one-half the lateral separation minimum except where reduction of protected airspace has been authorized.

PROTECTED SEGMENT- The protected segment is a segment on the amended TFM route that is to be inhibited from automatic adapted route alteration by ERAM.

PT−
(See PROCEDURE TURN.)

PTP−
(See POINT−TO−POINT.)

PTS−
(See POLAR TRACK STRUCTURE.)

PUBLIC AIRCRAFT OPERATION (PAO)− A UAS operation meeting the qualifications and conditions required for the operation of a public aircraft.
(See AC−1.1)
(See AIM)

PUBLISHED INSTRUMENT APPROACH PROCEDURE VISUAL SEGMENT− A segment on an IAP chart annotated as "Fly Visual to Airport" or "Fly Visual." A dashed arrow will indicate the visual flight path on the profile and plan view with an associated note on the approximate heading and distance. The visual segment should be flown as a dead reckoning course while maintaining visual conditions.

PUBLISHED ROUTE− A route for which an IFR altitude has been established and published; e.g., Federal Airways, Jet Routes, Area Navigation Routes, Specified Direct Routes.

PWS−
(See PREDICTIVE WIND SHEAR ALERT SYSTEM.)

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

RAD−
(See ROUTE AMENDMENT DIALOG.)

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 radar which can be provided by a controller to a pilot of a radar identified aircraft.

a. Radar Monitoring− The radar flight-following of aircraft, whose primary navigation is being performed by the pilot, to observe and note deviations from its authorized flight path, airway, or route. When being applied specifically to radar monitoring of instrument approaches; i.e., with precision approach radar (PAR) or radar monitoring of simultaneous ILS,RNAV and GLS approaches, it includes advice and instructions whenever an aircraft nears or exceeds the prescribed PAR safety limit or simultaneous ILS RNAV and GLS no transgression zone.

(See ADDITIONAL SERVICES.)
(See TRAFFIC ADVISORIES.)

b. Radar Navigational Guidance− Vectoring aircraft to provide course guidance.

c. Radar Separation− Radar spacing of aircraft in accordance with established minima.

(See ICAO term RADAR SERVICE.)

RADAR SERVICE [ICAO]− Term used to indicate a service provided directly by means of radar.

a. Monitoring− The use of radar for the purpose of providing aircraft with information and advice relative to significant deviations from nominal flight path.

b. Separation− The separation used when aircraft position information is derived from radar sources.

RADAR SERVICE TERMINATED− Used by ATC to inform a pilot that he/she will no longer be provided any of the services that could be received while in radar contact. Radar service is automatically terminated, and the pilot is not advised in the following cases:

a. An aircraft cancels its IFR flight plan, except within Class B airspace, Class C airspace, a TRSA, or where Basic Radar service is provided.

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

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

d. An aircraft completes a radar approach.

RADAR SURVEILLANCE− The radar observation of a given geographical area for the purpose of performing some radar function.

RADAR TRAFFIC ADVISORIES− Advisories issued to alert pilots to known or observed radar traffic which may affect the intended route of flight of their aircraft.
(See TRAFFIC ADVISORIES.)

RADAR TRAFFIC INFORMATION SERVICE−
(See TRAFFIC ADVISORIES.)

RADAR VECTORING [ICAO]− Provision of navigational guidance to aircraft in the form of specific headings, based on the use of radar.

RADIAL− A magnetic bearing extending from a VOR/VORTAC/TACAN navigation facility.

RADIO−

a. A device used for communication.

b. Used to refer to a flight service station; e.g., "Seattle Radio" is used to call Seattle FSS.

RADIO ALTIMETER− Aircraft equipment which makes use of the reflection of radio waves from the ground to determine the height of the aircraft above the surface.

RADIO BEACON−
(See NONDIRECTIONAL BEACON.)

RADIO−CONTROLLED (RC)− The use of control signals transmitted radio to a remotely controlled device, as in radio−controlled model airplanes.

RADIO DETECTION AND RANGING−
(See RADAR.)

RADIO MAGNETIC INDICATOR− An aircraft navigational instrument coupled with a gyro compass or similar compass that indicates the direction of a selected NAVAID and indicates bearing with respect to the heading of the aircraft.

RAIS−
(See REMOTE AIRPORT INFORMATION SERVICE.)

RAMP−
(See APRON.)

RANDOM ALTITUDE− An altitude inappropriate for direction of flight and/or not in accordance with FAA Order JO 7110.65, paragraph 4−5−1, VERTICAL SEPARATION MINIMA.

RANDOM ROUTE− Any route not established or charted/published or not otherwise available to all users.

RC
(See RADIO−CONTROLLED.)

RC−
(See ROAD RECONNAISSANCE.)

RCAG−
(See REMOTE COMMUNICATIONS AIR/GROUND FACILITY.)

RCC−
(See RESCUE COORDINATION CENTER.)

RCO−
(See REMOTE COMMUNICATIONS OUTLET.)

RCR−
(See RUNWAY CONDITION READING.)

READ BACK− Repeat my message back to me.

RECEIVER AUTONOMOUS INTEGRITY MONITORING (RAIM)− A technique whereby a civil GNSS receiver/processor determines the integrity of the GNSS navigation signals without reference to sensors or non-DoD integrity systems other than the receiver itself. This determination is achieved by a consistency check among redundant pseudorange measurements.

RECEIVING CONTROLLER− A controller/facility receiving control of an aircraft from another controller/facility.

RECEIVING FACILITY−
(See RECEIVING CONTROLLER.)

RECONFORMANCE− The automated process of bringing an aircraft's Current Plan Trajectory into conformance with its track.

RECREATIONAL FLYER− Pilot of a UAS who is operating under 49 USC §44809, Exception for Limited Recreational Operations of Unmanned Aircraft.

REDUCE SPEED TO (SPEED)−
(See SPEED ADJUSTMENT.)

REDUCED VERTICAL SEPARATION MINIMUM (RVSM) AIRSPACE− RVSM airspace is defined as any airspace between FL 290 and FL 410 inclusive, where eligible aircraft are separated vertically by 1,000 feet. Authorization guidance for operations in this airspace is provided in Advisory Circular AC 91−85.

REFINED HAZARD AREA (RHA)− Used by ATC. Airspace that is defined and distributed after a failure of a launch or reentry operation to provide a more concise depiction of the hazard location than a Contingency Hazard Area.
(See AIRCRAFT HAZARD AREA.)
(See CONTINGENCY HAZARD AREA.)
(See TRANSITIONAL HAZARD AREA.)

REIL−
(See RUNWAY END IDENTIFIER LIGHTS.)

RELEASE TIME− A departure time restriction issued to a pilot by ATC (either directly or through an authorized relay) when necessary to separate a departing aircraft from other traffic.
(See ICAO term RELEASE TIME.)

RELEASE TIME [ICAO]− Time prior to which an aircraft should be given further clearance or prior to which it should not proceed in case of radio failure.

REMOTE AIRPORT INFORMATION SERVICE (RAIS)− A temporary service provided by facilities, which are not located on the landing airport, but have communication capability and automated weather reporting available to the pilot at the landing airport.

REMOTE COMMUNICATIONS AIR/GROUND FACILITY− An unmanned VHF/UHF transmitter/receiver facility which is used to expand ARTCC air/ground communications coverage and to facilitate direct contact between pilots and controllers. RCAG facilities are sometimes not equipped with emergency frequencies 121.5 MHz and 243.0 MHz.
(Refer to AIM.)

REMOTE COMMUNICATIONS OUTLET (RCO)− An unmanned communications facility remotely controlled by air traffic personnel. RCOs serve FSSs. Remote Transmitter/Receivers (RTR) serve terminal ATC facilities. An RCO or RTR may be UHF or VHF and will extend the communication range of the air traffic facility. There are several classes of RCOs and RTRs. The class is determined by the number of transmitters or receivers. Classes A through G are used primarily for air/ground purposes. RCO and RTR class O facilities are nonprotected outlets subject to undetected and prolonged outages. RCO (O's) and RTR (O's) were established for the express purpose of providing ground-to-ground communications between air traffic control specialists and pilots located at a satellite airport for delivering en route clearances, issuing departure authorizations, and acknowledging instrument flight rules cancellations or departure/landing times. As a secondary function, they may be used for advisory purposes whenever the aircraft is below the coverage of the primary air/ground frequency.

REMOTE IDENTIFICATION (RID)− A system for electronic identification and secure oversight of UAS.
(See 4 CFR Part 89)
(See AIM)

REMOTE PILOT− Pilot of a UAS who is not operating as a recreational flyer under 49 USC §44809, the Exception for Limited Recreational Operations of Unmanned Aircraft.

REMOTE PILOT IN COMMAND (RPIC)− The RPIC is directly responsible for and is the final authority as to the operation of the unmanned aircraft system.

REMOTE TRANSMITTER/RECEIVER (RTR)−
(See REMOTE COMMUNICATIONS OUTLET.)

REPORT− Used to instruct pilots to advise ATC of specified information; e.g., "Report passing Hamilton VOR."

REPORTING POINT− A geographical location in relation to which the position of an aircraft is reported.
(See COMPULSORY REPORTING POINTS.)
(See ICAO term REPORTING POINT.)
(Refer to AIM.)

REPORTING POINT [ICAO]− A specified geographical location in relation to which the position of an aircraft can be reported.

REQUEST FULL ROUTE CLEARANCE− Used by pilots to request that the entire route of flight be read verbatim in an ATC clearance. Such request should be made to preclude receiving an ATC clearance based on the original filed flight plan when a filed IFR flight plan has been revised by the pilot, company, or operations prior to departure.

REQUIRED NAVIGATION PERFORMANCE (RNP)– A statement of the navigational performance necessary for operation within a defined airspace. The following terms are commonly associated with RNP:

a. Required Navigation Performance Level or Type (RNP-X). A value, in nautical miles (NM), from the intended horizontal position within which an aircraft would be at least 95-percent of the total flying time.

b. Advanced − Required Navigation Performance (A−RNP). A navigation specification based on RNP that requires advanced functions such as scalable RNP, radius−to−fix (RF) legs, and tactical parallel offsets. This sophisticated Navigation Specification (NavSpec) is designated by the abbreviation "A−RNP".

c. Required Navigation Performance (RNP) Airspace. A generic term designating airspace, route(s), leg(s), operation(s), or procedure(s) where minimum required navigational performance (RNP) have been established.

d. Actual Navigation Performance (ANP). A measure of the current estimated navigational performance. Also referred to as Estimated Position Error (EPE).

e. Estimated Position Error (EPE). A measure of the current estimated navigational performance. Also referred to as Actual Navigation Performance (ANP).

f. Lateral Navigation (LNAV). A function of area navigation (RNAV) equipment which calculates, displays, and provides lateral guidance to a profile or path.

g. Vertical Navigation (VNAV). A function of area navigation (RNAV) equipment which calculates, displays, and provides vertical guidance to a profile or path.

REROUTE IMPACT ASSESSMENT (RRIA)− A capability within the Traffic Flow Management System that is used to define and evaluate a potential reroute prior to implementation, with or without miles−in−trail (MIT) restrictions. RRIA functions estimate the impact on demand (e.g., sector loads) and performance (e.g., flight delay). Using RRIA, traffic management personnel can determine whether the reroute will sufficiently reduce demand in the Flow Constraint Area and not create excessive "spill over" demand in the adjacent airspace on a specific route segment or point of interest (POI).

RESCUE COORDINATION CENTER (RCC)− A search and rescue (SAR) facility equipped and manned to coordinate and control SAR operations in an area designated by the SAR plan. The U.S. Coast Guard and the U.S. Air Force have responsibility for the operation of RCCs.
(See ICAO term RESCUE CO-ORDINATION CENTRE.)

RESCUE CO-ORDINATION CENTRE [ICAO]− A unit responsible for promoting efficient organization of search and rescue service and for coordinating the conduct of search and rescue operations within a search and rescue region.

RESOLUTION ADVISORY− A display indication given to the pilot by the Traffic alert and Collision Avoidance System (TCAS II) recommending a maneuver to increase vertical separation relative to an intruding aircraft. Positive, negative, and vertical speed limit (VSL) advisories constitute the resolution advisories. A resolution advisory is also classified as corrective or preventive.

RESTRICTED AREA−
(See SPECIAL USE AIRSPACE.)
(See ICAO term RESTRICTED AREA.)

RESTRICTED AREA [ICAO]− An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions.

RESUME NORMAL SPEED− Used by ATC to advise a pilot to resume an aircraft's normal operating speed. It is issued to terminate a speed adjustment where no published speed restrictions apply. It does not delete speed restrictions in published procedures of upcoming segments of flight. This does not relieve the pilot of those speed restrictions that are applicable to 14 CFR Section 91.117.

RESUME OWN NAVIGATION− Used by ATC to advise a pilot to resume his/her own navigational responsibility. It is issued after completion of a radar vector or when radar contact is lost while the aircraft is being radar vectored.
(See RADAR CONTACT LOST.)
(See RADAR SERVICE TERMINATED.)

RESUME PUBLISHED SPEED– Used by ATC to advise a pilot to resume published speed restrictions that are applicable to a SID, STAR, or other instrument procedure. It is issued to terminate a speed adjustment where speed restrictions are published on a charted procedure.

RHA–
(See REFINED HAZARD AREA.)

RID–
(See REMOTE IDENTIFICATION.)

RMI–
(See RADIO MAGNETIC INDICATOR.)

RNAV–
(See AREA NAVIGATION (RNAV).)

RNAV APPROACH– An instrument approach procedure which relies on aircraft area navigation equipment for navigational guidance.
(See AREA NAVIGATION (RNAV).)
(See INSTRUMENT APPROACH PROCEDURE.)

RNAV VISUAL FLIGHT PROCEDURE (RVFP)– An RVFP is a special visual flight procedure flown on an IFR flight plan. It is flown in visual conditions and clear of clouds must be maintained. An RVFP is flown using an approved RNAV system to maintain published lateral and vertical paths to runways without an instrument approach procedure. It requires an ATC clearance and may begin at other points along the path of the charted procedure when approved by ATC. An RVFP is not published in the Federal Register for public use and the operator is required to have a specific Operations Specification approval. Required ceiling and visibility minima are published on the procedure chart. An RVFP does not have a missed approach procedure and is not evaluated for obstacle protection.

ROAD RECONNAISSANCE (RC)– Military activity requiring navigation along roads, railroads, and rivers. Reconnaissance route/route segments are seldom along a straight line and normally require a lateral route width of 10 NM to 30 NM and an altitude range of 500 feet to 10,000 feet AGL.

ROGER– I have received all of your last transmission. It should not be used to answer a question requiring a yes or a no answer.
(See AFFIRMATIVE.)
(See NEGATIVE.)

ROLLOUT RVR–
(See VISIBILITY.)

ROTOR WASH– A phenomenon resulting from the vertical down wash of air generated by the main rotor(s) of a helicopter.

ROUND–ROBIN FLIGHT PLAN– A single flight plan filed from the departure airport to an intermediary destination(s) and then returning to the original departure airport.

ROUTE– A defined path, consisting of one or more courses in a horizontal plane, which aircraft traverse over the surface of the earth.
(See AIRWAY.)
(See JET ROUTE.)
(See PUBLISHED ROUTE.)
(See UNPUBLISHED ROUTE.)

ROUTE ACTION NOTIFICATION– EDST notification that an ADR/ADAR/AAR has been applied to the flight plan.
(See ATC PREFERRED ROUTE NOTIFICATION.)
(See EN ROUTE DECISION SUPPORT TOOL.)

ROUTE AMENDMENT DIALOG (RAD)− A capability within the Traffic Flow Management System that allows traffic management personnel to submit or edit a route amendment for one or more flights.

ROUTE SEGMENT− As used in Air Traffic Control, a part of a route that can be defined by two navigational fixes, two NAVAIDs, or a fix and a NAVAID.
(See FIX.)
(See ROUTE.)
(See ICAO term ROUTE SEGMENT.)

ROUTE SEGMENT [ICAO]− A portion of a route to be flown, as defined by two consecutive significant points specified in a flight plan.

RPIC−
(See REMOTE PILOT IN COMMAND.)

RRIA−
(See REROUTE IMPACT ASSESSMENT.)

RSA−
(See RUNWAY SAFETY AREA.)

RTR−
(See REMOTE TRANSMITTER/RECEIVER.)

RUNWAY− A defined rectangular area on a land airport prepared for the landing and takeoff run of aircraft along its length. Runways are normally numbered in relation to their magnetic direction rounded off to the nearest 10 degrees; e.g., Runway 1, Runway 25.
(See PARALLEL RUNWAYS.)
(See ICAO term RUNWAY.)

RUNWAY [ICAO]− A defined rectangular area on a land aerodrome prepared for the landing and takeoff of aircraft.

RUNWAY CENTERLINE LIGHTING−
(See AIRPORT LIGHTING.)

RUNWAY CONDITION CODES (RwyCC)− Numerical readings, provided by airport operators, that indicate runway surface contamination (for example, slush, ice, rain, etc.). These values range from “1” (poor) to “6” (dry) and must be included on the ATIS when the reportable condition is less than 6 in any one or more of the three runway zones (touchdown, midpoint, rollout).

RUNWAY CONDITION READING− Numerical decelerometer readings relayed by air traffic controllers at USAF and certain civil bases for use by the pilot in determining runway braking action. These readings are routinely relayed only to USAF and Air National Guard Aircraft.
(See BRAKING ACTION.)

RUNWAY CONDITION REPORT (RwyCR)− A data collection worksheet used by airport operators that correlates the runway percentage of coverage along with the depth and type of contaminant for the purpose of creating a FICON NOTAM.
(See RUNWAY CONDITION CODES.)

RUNWAY END IDENTIFIER LIGHTS (REIL)−
(See AIRPORT LIGHTING.)

RUNWAY ENTRANCE LIGHTS (REL)−An array of red lights which include the first light at the hold line followed by a series of evenly spaced lights to the runway edge aligned with the taxiway centerline, and one additional light at the runway centerline in line with the last two lights before the runway edge.

RUNWAY GRADIENT− The average slope, measured in percent, between two ends or points on a runway. Runway gradient is depicted on Government aerodrome sketches when total runway gradient exceeds 0.3%.

RUNWAY HEADING– The magnetic direction that corresponds with the runway centerline extended, not the painted runway number. When cleared to "fly or maintain runway heading," pilots are expected to fly or maintain the heading that corresponds with the extended centerline of the departure runway. Drift correction shall not be applied; e.g., Runway 4, actual magnetic heading of the runway centerline 044, fly 044.

RUNWAY IN USE/ACTIVE RUNWAY/DUTY RUNWAY– Any runway or runways currently being used for takeoff or landing. When multiple runways are used, they are all considered active runways. In the metering sense, a selectable adapted item which specifies the landing runway configuration or direction of traffic flow. The adapted optimum flight plan from each transition fix to the vertex is determined by the runway configuration for arrival metering processing purposes.

RUNWAY LIGHTS–
(See AIRPORT LIGHTING.)

RUNWAY MARKINGS–
(See AIRPORT MARKING AIDS.)

RUNWAY OVERRUN– In military aviation exclusively, a stabilized or paved area beyond the end of a runway, of the same width as the runway plus shoulders, centered on the extended runway centerline.

RUNWAY PROFILE DESCENT– An instrument flight rules (IFR) air traffic control arrival procedure to a runway published for pilot use in graphic and/or textual form and may be associated with a STAR. Runway Profile Descents provide routing and may depict crossing altitudes, speed restrictions, and headings to be flown from the en route structure to the point where the pilot will receive clearance for and execute an instrument approach procedure. A Runway Profile Descent may apply to more than one runway if so stated on the chart.
(Refer to AIM.)

RUNWAY SAFETY AREA– A defined surface surrounding the runway prepared, or suitable, for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway. The dimensions of the RSA vary and can be determined by using the criteria contained within AC 150/5300-13, Airport Design, Chapter 3. Figure 3−1 in AC 150/5300-13 depicts the RSA. The design standards dictate that the RSA shall be:

a. Cleared, graded, and have no potentially hazardous ruts, humps, depressions, or other surface variations;

b. Drained by grading or storm sewers to prevent water accumulation;

c. Capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft; and,

d. Free of objects, except for objects that need to be located in the runway safety area because of their function. These objects shall be constructed on low impact resistant supports (frangible mounted structures) to the lowest practical height with the frangible point no higher than 3 inches above grade.
(Refer to AC 150/5300-13, Airport Design, Chapter 3.)

RUNWAY STATUS LIGHTS (RWSL) SYSTEM– The RWSL is a system of runway and taxiway lighting to provide pilots increased situational awareness by illuminating runway entry lights (REL) when the runway is unsafe for entry or crossing, and take-off hold lights (THL) when the runway is unsafe for departure.

RUNWAY TRANSITION–
(See SEGMENTS OF A SID/STAR)

RUNWAY TRANSITION WAYPOINT–
(See SEGMENTS OF A SID/STAR.)

RUNWAY USE PROGRAM– A noise abatement runway selection plan designed to enhance noise abatement efforts with regard to airport communities for arriving and departing aircraft. These plans are developed into runway use programs and apply to all turbojet aircraft 12,500 pounds or heavier; turbojet aircraft less than 12,500 pounds are included only if the airport proprietor determines that the aircraft creates a noise problem. Runway use programs are coordinated with FAA offices, and safety criteria used in these programs are developed by the

Office of Flight Operations. Runway use programs are administered by the Air Traffic Service as "Formal" or "Informal" programs.

a. Formal Runway Use Program− An approved noise abatement program which is defined and acknowledged in a Letter of Understanding between Flight Operations, Air Traffic Service, the airport proprietor, and the users. Once established, participation in the program is mandatory for aircraft operators and pilots as provided for in 14 CFR Section 91.129.

b. Informal Runway Use Program− An approved noise abatement program which does not require a Letter of Understanding, and participation in the program is voluntary for aircraft operators/pilots.

RUNWAY VISUAL RANGE (RVR)−
(See VISIBILITY.)

RVFP−
(See RNAV VISUAL FLIGHT PROCEDURE.)

RwyCC−
(See RUNWAY CONDITION CODES.)

RwyCR−
(See RUNWAY CONDITION REPORT.)

S

SAA−
(See SENSE AND AVOID.)
(See SPECIAL ACTIVITY AIRSPACE.)

SAFETY ALERT− A safety alert issued by ATC to aircraft under their control if ATC is aware the aircraft is at an altitude which, in the controller's judgment, places the aircraft in unsafe proximity to terrain, obstructions, or other aircraft. The controller may discontinue the issuance of further alerts if the pilot advises he/she is taking action to correct the situation or has the other aircraft in sight.

a. Terrain/Obstruction Alert− A safety alert issued by ATC to aircraft under their control if ATC is aware the aircraft is at an altitude which, in the controller's judgment, places the aircraft in unsafe proximity to terrain/obstructions; e.g., "Low Altitude Alert, check your altitude immediately."

b. Aircraft Conflict Alert− A safety alert issued by ATC to aircraft under their control if ATC is aware of an aircraft that is not under their control at an altitude which, in the controller's judgment, places both aircraft in unsafe proximity to each other. With the alert, ATC will offer the pilot an alternate course of action when feasible; e.g., "Traffic Alert, advise you turn right heading zero niner zero or climb to eight thousand immediately."

Note: The issuance of a safety alert is contingent upon the capability of the controller to have an awareness of an unsafe condition. The course of action provided will be predicated on other traffic under ATC control. Once the alert is issued, it is solely the pilot's prerogative to determine what course of action, if any, he/she will take.

SAFETY LOGIC SYSTEM− A software enhancement to ASDE−3, ASDE−X, and ASSC, that predicts the path of aircraft landing and/or departing, and/or vehicular movements on runways. Visual and aural alarms are activated when the safety logic projects a potential collision. The Airport Movement Area Safety System (AMASS) is a safety logic system enhancement to the ASDE−3. The Safety Logic System for ASDE−X and ASSC is an integral part of the software program.

SAFETY LOGIC SYSTEM ALERTS−

a. ALERT−

1. An actual situation involving two real Safety Logic tracks (aircraft/aircraft, aircraft/vehicle, or aircraft/other tangible object) that the Safety Logic System has predicted will result in an imminent collision, based upon the Safety Logic parameters.

2. An actual situation involving a single Safety Logic track arriving to, or departing from, a closed runway.

3. An actual situation involving a single Safety Logic track arriving to a taxiway.

b. FALSE ALERT−

1. Alerts generated by one or more false surface radar or cooperative surveillance targets, that the ASDE system has interpreted as real tracks and placed into Safety Logic.

2. Alerts in which the Safety Logic System did not perform correctly, based upon the design specifications and Safety Logic parameters.

3. Alerts generated by surface radar targets caused by moderate or greater precipitation.

c. NUISANCE ALERT− An alert in which one or more of the following is true:

1. The alert is generated by a known situation that is not considered an unsafe operation, such as LAHSO or other approved operations.

2. The alert is generated by inaccurate cooperative surveillance data received by the Safety Logic System.

3. One or more of the aircraft involved in the alert is not intending to use a runway/taxiway (helicopter, pipeline patrol, non−Mode C overflight, etc.).

d. VALID NON−ALERT− A situation in which the Safety Logic System correctly determines that an alert is not required, based upon the design specifications and Safety Logic parameters.

e. INVALID NON−ALERT− A situation in which the Safety Logic System did not issue an alert when an alert was required, based upon the design specifications and Safety Logic parameters.

SAIL BACK− A maneuver during high wind conditions (usually with power off) where float plane movement is controlled by water rudders/opening and closing cabin doors.

SAME DIRECTION AIRCRAFT− Aircraft are operating in the same direction when:

a. They are following the same track in the same direction; or

b. Their tracks are parallel and the aircraft are flying in the same direction; or

c. Their tracks intersect at an angle of less than 45 degrees.

SAR−
(See SEARCH AND RESCUE.)

SATELLITE−BASED AUGMENTATION SYSTEM (SBAS) − A wide coverage augmentation system in which the user receives augmentation information from a satellite−based transmitter.
(See WIDE−AREA AUGMENTATION SYSTEM (WAAS.)

SAW−
(See AVIATION WATCH NOTIFICATION MESSAGE.)

SAY AGAIN− Used to request a repeat of the last transmission. Usually specifies transmission or portion thereof not understood or received; e.g., "Say again all after ABRAM VOR."

SAY ALTITUDE− Used by ATC to ascertain an aircraft's specific altitude/flight level. When the aircraft is climbing or descending, the pilot should state the indicated altitude rounded to the nearest 100 feet.

SAY HEADING− Used by ATC to request an aircraft heading. The pilot should state the actual heading of the aircraft.

SCHEDULED TIME OF ARRIVAL (STA)− A STA is the desired time that an aircraft should cross a certain point (landing or metering fix). It takes other traffic and airspace configuration into account. A STA time shows the results of the TBFM scheduler that has calculated an arrival time according to parameters such as optimized spacing, aircraft performance, and weather.

SDF−
(See SIMPLIFIED DIRECTIONAL FACILITY.)

SE SAR−
(See SURVEILLANCE ENHANCED SEARCH AND RESCUE.)

SEA LANE− A designated portion of water outlined by visual surface markers for and intended to be used by aircraft designed to operate on water.

SEARCH AND RESCUE− A service which seeks missing aircraft and assists those found to be in need of assistance. It is a cooperative effort using the facilities and services of available Federal, state and local agencies. The U.S. Coast Guard is responsible for coordination of search and rescue for the Maritime Region, and the U.S. Air Force is responsible for search and rescue for the Inland Region. Information pertinent to search and rescue should be passed through any air traffic facility or be transmitted directly to the Rescue Coordination Center by telephone.
(See FLIGHT SERVICE STATION.)
(See RESCUE COORDINATION CENTER.)
(Refer to AIM.)

SEARCH AND RESCUE FACILITY− A facility responsible for maintaining and operating a search and rescue (SAR) service to render aid to persons and property in distress. It is any SAR unit, station, NET, or other operational activity which can be usefully employed during an SAR Mission; e.g., a Civil Air Patrol Wing, or a Coast Guard Station.
(See SEARCH AND RESCUE.)

SECNOT−
(See SECURITY NOTICE.)

SECONDARY RADAR TARGET− A target derived from a transponder return presented on a radar display.

SECTIONAL AERONAUTICAL CHARTS−
(See AERONAUTICAL CHART.)

SECTOR LIST DROP INTERVAL− A parameter number of minutes after the meter fix time when arrival aircraft will be deleted from the arrival sector list.

SECURITY NOTICE (SECNOT) − A SECNOT is a request originated by the Air Traffic Security Coordinator (ATSC) for an extensive communications search for aircraft involved, or suspected of being involved, in a security violation, or are considered a security risk. A SECNOT will include the aircraft identification, search area, and expiration time. The search area, as defined by the ATSC, could be a single airport, multiple airports, a radius of an airport or fix, or a route of flight. Once the expiration time has been reached, the SECNOT is considered to be canceled.

SECURITY SERVICES AIRSPACE − Areas established through the regulatory process or by NOTAM, issued by the Administrator under title 14, CFR, sections 99.7, 91.141, and 91.139, which specify that ATC security services are required; i.e., ADIZ or temporary flight rules areas.

SEE AND AVOID− When weather conditions permit, pilots operating IFR or VFR are required to observe and maneuver to avoid other aircraft. Right-of-way rules are contained in 14 CFR Part 91.

SEGMENTED CIRCLE− A system of visual indicators designed to provide traffic pattern information at airports without operating control towers.
(Refer to AIM.)

SEGMENTS OF A SID/STAR−

a. En Route Transition− The segment(s) of a SID/STAR that connect to/from en route flight. Not all SIDs/STARs will contain an en route transition.

b. En Route Transition Waypoint− The NAVAID/fix/waypoint that defines the beginning of the SID/STAR en route transition.

c. Common Route− The segment(s) of a SID/STAR procedure that provides a single route serving an airport/runway or multiple airports/runways. The common route may consist of a single point. Not all conventional SIDs will contain a common route.

d. Runway Transition− The segment(s) of a SID/STAR between the common route/point and the runway(s). Not all SIDs/STARs will contain a runway transition.

e. Runway Transition Waypoint (RTW)− On a STAR, the NAVAID/fix/waypoint that defines the end of the common route or en route transition and the beginning of a runway transition (In the arrival route description found on the STAR chart, the last fix of the common route and the first fix of the runway transition(s)).

SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE− An instrument approach procedure may have as many as four separate segments depending on how the approach procedure is structured.

a. Initial Approach− The segment between the initial approach fix and the intermediate fix or the point where the aircraft is established on the intermediate course or final approach course.
(See ICAO term INITIAL APPROACH SEGMENT.)

b. Intermediate Approach− The segment between the intermediate fix or point and the final approach fix.
(See ICAO term INTERMEDIATE APPROACH SEGMENT.)

c. Final Approach− The segment between the final approach fix or point and the runway, airport, or missed approach point.
(See ICAO term FINAL APPROACH SEGMENT.)

d. Missed Approach− The segment between the missed approach point or the point of arrival at decision height and the missed approach fix at the prescribed altitude.
(Refer to 14 CFR Part 97.)
(See ICAO term MISSED APPROACH PROCEDURE.)

SELF−BRIEFING− A self−briefing is a review, using automated tools, of all meteorological and aeronautical information that may influence the pilot in planning, altering, or canceling a proposed route of flight.

SENSE AND AVOID (SAA) − The capability of an unmanned aircraft to detect (sense) and avoid collisions with other aircraft and all obstacles, whether airborne or on the ground while operating in the NAS.

SEPARATION− In air traffic control, the spacing of aircraft to achieve their safe and orderly movement in flight and while landing and taking off.
(See SEPARATION MINIMA.)
(See ICAO term SEPARATION.)

SEPARATION [ICAO]− Spacing between aircraft, levels or tracks.

SEPARATION MINIMA− The minimum longitudinal, lateral, or vertical distances by which aircraft are spaced through the application of air traffic control procedures.
(See SEPARATION.)

SERVICE− A generic term that designates functions or assistance available from or rendered by air traffic control. For example, Class C service would denote the ATC services provided within a Class C airspace area.

SEVERE WEATHER AVOIDANCE PLAN (SWAP)− An approved plan to minimize the affect of severe weather on traffic flows in impacted terminal and/or ARTCC areas. A SWAP is normally implemented to provide the least disruption to the ATC system when flight through portions of airspace is difficult or impossible due to severe weather.

SEVERE WEATHER FORECAST ALERTS− Preliminary messages issued in order to alert users that a Severe Weather Watch Bulletin (WW) is being issued. These messages define areas of possible severe thunderstorms or tornado activity. The messages are unscheduled and issued as required by the Storm Prediction Center (SPC) at Norman, Oklahoma.
(See AIRMET.)
(See CONVECTIVE SIGMET.)
(See CWA.)
(See GRAPHICAL AIRMEN'S METEOROLOGICAL INFORMATION.)
(See SIGMET.)

SFA−
(See SINGLE FREQUENCY APPROACH.)

SFO−
(See SIMULATED FLAMEOUT.)

SGI
(See SPECIAL GOVERNMENT INTEREST.)

SHF−
(See SUPER HIGH FREQUENCY.)

SHORT RANGE CLEARANCE− A clearance issued to a departing IFR flight which authorizes IFR flight to a specific fix short of the destination while air traffic control facilities are coordinating and obtaining the complete clearance.

SHORT TAKEOFF AND LANDING AIRCRAFT (STOL)− An aircraft which, at some weight within its approved operating weight, is capable of operating from a runway in compliance with the applicable STOL characteristics, airworthiness, operations, noise, and pollution standards.
(See VERTICAL TAKEOFF AND LANDING AIRCRAFT.)

SIAP−
(See STANDARD INSTRUMENT APPROACH PROCEDURE.)

SID−
(See STANDARD INSTRUMENT DEPARTURE.)

SIDESTEP MANEUVER− A visual maneuver accomplished by a pilot at the completion of an instrument approach to permit a straight-in landing on a parallel runway not more than 1,200 feet to either side of the runway to which the instrument approach was conducted.

(Refer to AIM.)

SIGMET− A weather advisory issued concerning weather significant to the safety of all aircraft. SIGMET advisories cover severe and extreme turbulence, severe icing, and widespread dust or sandstorms that reduce visibility to less than 3 miles.

(See AIRMET.)
(See CONVECTIVE SIGMET.)
(See CWA.)
(See GRAPHICAL AIRMEN'S METEOROLOGICAL INFORMATION.)
(See ICAO term SIGMET INFORMATION.)
(See SAW.)
(Refer to AIM.)

SIGMET INFORMATION [ICAO]− Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather phenomena which may affect the safety of aircraft operations.

SIGNIFICANT METEOROLOGICAL INFORMATION−

(See SIGMET.)

SIGNIFICANT POINT− A point, whether a named intersection, a NAVAID, a fix derived from a NAVAID(s), or geographical coordinate expressed in degrees of latitude and longitude, which is established for the purpose of providing separation, as a reporting point, or to delineate a route of flight.

SIMPLIFIED DIRECTIONAL FACILITY (SDF)− A NAVAID used for nonprecision instrument approaches. The final approach course is similar to that of an ILS localizer except that the SDF course may be offset from the runway, generally not more than 3 degrees, and the course may be wider than the localizer, resulting in a lower degree of accuracy.

(Refer to AIM.)

SIMULATED FLAMEOUT− A practice approach by a jet aircraft (normally military) at idle thrust to a runway. The approach may start at a runway (high key) and may continue on a relatively high and wide downwind leg with a continuous turn to final. It terminates in landing or low approach. The purpose of this approach is to simulate a flameout.

(See FLAMEOUT.)

SIMULTANEOUS CLOSE PARALLEL APPROACHES− A simultaneous, independent approach operation permitting ILS/RNAV/GLS approaches to airports having parallel runways separated by at least 3,000 feet and less than 4,300−feet between centerlines. Aircraft are permitted to pass each other during these simultaneous operations. Integral parts of a total system are radar, NTZ monitoring with enhanced FMA color displays that include aural and visual alerts and predictive aircraft position software, communications override, ATC procedures, an Attention All Users Page (AAUP), PRM in the approach name, and appropriate ground based and airborne equipment. High update rate surveillance sensor required for certain runway or approach course separations.

SIMULTANEOUS (CONVERGING) DEPENDENT APPROACHES- An approach operation permitting ILS/RNAV/GLS approaches to runways or missed approach courses that intersect where required minimum spacing between the aircraft on each final approach course is required.

SIMULTANEOUS (CONVERGING) INDEPENDENT APPROACHES- An approach operation permitting ILS/RNAV/GLS approaches to non-parallel runways where approach procedure design maintains the required aircraft spacing throughout the approach and missed approach and hence the operations may be conducted independently.

SIMULTANEOUS ILS APPROACHES− An approach system permitting simultaneous ILS approaches to airports having parallel runways separated by at least 4,300 feet between centerlines. Integral parts of a total system are ILS, radar, communications, ATC procedures, and appropriate airborne equipment.

(See PARALLEL RUNWAYS.)
(Refer to AIM.)

SIMULTANEOUS OFFSET INSTRUMENT APPROACH (SOIA)− An instrument landing system comprised of an ILS PRM, RNAV PRM or GLS PRM approach to one runway and an offset LDA PRM with glideslope or an RNAV PRM or GLS PRM approach utilizing vertical guidance to another where parallel runway spaced less than 3,000 feet and at least 750 feet apart. The approach courses converge by 2.5 to 3 degrees. Simultaneous close parallel PRM approach procedures apply up to the point where the approach course separation becomes 3,000 feet, at the offset MAP. From the offset MAP to the runway threshold, visual separation by the aircraft conducting the offset approach is utilized.

(Refer to AIM)

SIMULTANEOUS (PARALLEL) DEPENDENT APPROACHES- An approach operation permitting ILS/RNAV/GLS approaches to adjacent parallel runways where prescribed diagonal spacing must be maintained. Aircraft are not permitted to pass each other during simultaneous dependent operations. Integral parts of a total system ATC procedures, and appropriate airborne and ground based equipment.

SINGLE DIRECTION ROUTES− Preferred IFR Routes which are sometimes depicted on high altitude en route charts and which are normally flown in one direction only.

(See PREFERRED IFR ROUTES.)
(Refer to CHART SUPPLEMENT U.S.)

SINGLE FREQUENCY APPROACH− A service provided under a letter of agreement to military single-piloted turbojet aircraft which permits use of a single UHF frequency during approach for landing. Pilots will not normally be required to change frequency from the beginning of the approach to touchdown except that pilots conducting an en route descent are required to change frequency when control is transferred from the air route traffic control center to the terminal facility. The abbreviation "SFA" in the DoD FLIP IFR Supplement under "Communications" indicates this service is available at an aerodrome.

SINGLE-PILOTED AIRCRAFT− A military turbojet aircraft possessing one set of flight controls, tandem cockpits, or two sets of flight controls but operated by one pilot is considered single-piloted by ATC when determining the appropriate air traffic service to be applied.

(See SINGLE FREQUENCY APPROACH.)

SKYSPOTTER− A pilot who has received specialized training in observing and reporting inflight weather phenomena.

SLASH− A radar beacon reply displayed as an elongated target.

SLDI−

(See SECTOR LIST DROP INTERVAL.)

SLOW TAXI− To taxi a float plane at low power or low RPM.

SMALL UNMANNED AIRCRAFT SYSTEM (sUAS)– An unmanned aircraft weighing less than 55 pounds on takeoff, including everything that is on board or otherwise attached to the aircraft.

SN−

(See SYSTEM STRATEGIC NAVIGATION.)

SPACE−BASED ADS−B (SBA)− A constellation of satellites that receives ADS−B Out broadcasts and relays that information to the appropriate surveillance facility. The currently deployed SBA system is only capable of receiving broadcasts from 1090ES−equipped aircraft, and not from those equipped with only a universal access transceiver (UAT). Also, aircraft with a top−of−fuselage−mounted transponder antenna (required for TCAS II installations) will be better received by SBA, especially at latitudes below 45 degrees.

(See AUTOMATIC DEPENDENT SURVEILLANCE−BROADCAST.)
(See AUTOMATIC DEPENDENT SURVEILLANCE−BROADCAST OUT.)

SPACE LAUNCH AND REENTRY AREA− Locations where commercial space launch and/or reentry operations occur. For pilot awareness, a rocket−shaped symbol is used to depict space launch and reentry areas on sectional aeronautical charts.

SPEAK SLOWER− Used in verbal communications as a request to reduce speech rate.

SPECIAL GOVERNMENT INTEREST (SGI)− A near real−time airspace authorization for Part 91 or Part 107 UAS, which supports activities that answer significant and urgent governmental interests. These include: national defense, homeland security, law enforcement, and emergency operations objectives.

SPECIAL ACTIVITY AIRSPACE (SAA)− Airspace with defined dimensions within the National Airspace System wherein limitations may be imposed upon operations for national defense, homeland security, public interest, or public safety. Special activity airspace includes but is not limited to the following; Air Traffic Control Assigned Airspace (ATCAA), Altitude Reservations (ALTRV), Military Training Routes (MTR), Air Refueling Tracks and Anchors, Temporary Flight Restrictions (TFR), Special Security Instructions (SSI), etc. Special Use Airspace (SUA) is a subset of Special Activity Airspace.

(See SPECIAL USE AIRSPACE.)

SPECIAL AIR TRAFFIC RULES (SATR)− Rules that govern procedures for conducting flights in certain areas listed in 14 CFR Part 93. The term "SATR" is used in the United States to describe the rules for operations in specific areas designated in the Code of Federal Regulations.

(Refer to 14 CFR Part 93.)

SPECIAL EMERGENCY− A condition of air piracy or other hostile act by a person(s) aboard an aircraft which threatens the safety of the aircraft or its passengers.

SPECIAL FLIGHT RULES AREA (SFRA)− An area in the NAS, described in 14 CFR Part 93, wherein the flight of aircraft is subject to special traffic rules, unless otherwise authorized by air traffic control. Not all areas listed in 14 CFR Part 93 are designated SFRA, but special air traffic rules apply to all areas described in 14 CFR Part 93.

SPECIAL INSTRUMENT APPROACH PROCEDURE−

(See INSTRUMENT APPROACH PROCEDURE.)

SPECIAL USE AIRSPACE− Airspace of defined dimensions identified by an area on the surface of the earth wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. Types of special use airspace are:

a. Alert Area− Airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft. Alert Areas are depicted on aeronautical charts for the information of nonparticipating pilots. All activities within an Alert Area are conducted in accordance with Federal Aviation Regulations, and pilots of participating aircraft as well as pilots transiting the area are equally responsible for collision avoidance.

b. Controlled Firing Area− Airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons and property on the ground.

c. Military Operations Area (MOA)− Permanent and temporary MOAs are airspace established outside of Class A airspace area to separate or segregate certain nonhazardous military activities from IFR traffic and to identify for VFR traffic where these activities are conducted. Permanent MOAs are depicted on Sectional Aeronautical, VFR Terminal Area, and applicable En Route Low Altitude Charts.

Note: Temporary MOAs are not charted.

(Refer to AIM.)

d. National Security Area (NSA)– Airspace of defined vertical and lateral dimensions established at locations where there is a requirement for increased security of ground facilities. Pilots are requested to voluntarily avoid flying through the depicted NSA. When a greater level of security is required, flight through an NSA may be temporarily prohibited by establishing a TFR under the provisions of 14 CFR Section 99.7. Such prohibitions will be issued by FAA Headquarters and disseminated via the U.S. NOTAM System.

(Refer to AIM)

e. Prohibited Area– Airspace designated under 14 CFR Part 73 within which no person may operate an aircraft without the permission of the using agency.

(Refer to AIM.)

(Refer to En Route Charts.)

f. Restricted Area– Permanent and temporary restricted areas are airspace designated under 14 CFR Part 73, within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint use and IFR/VFR operations in the area may be authorized by the controlling ATC facility when it is not being utilized by the using agency. Permanent restricted areas are depicted on Sectional Aeronautical, VFR Terminal Area, and applicable En Route charts. Where joint use is authorized, the name of the ATC controlling facility is also shown.

Note: Temporary restricted areas are not charted.

(Refer to 14 CFR Part 73.)

(Refer to AIM.)

g. Warning Area– A warning area is airspace of defined dimensions extending from 3 nautical miles outward from the coast of the United States, that contains activity that may be hazardous to nonparticipating aircraft. The purpose of such warning area is to warn nonparticipating pilots of the potential danger. A warning area may be located over domestic or international waters or both.

SPECIAL VFR CONDITIONS– Meteorological conditions that are less than those required for basic VFR flight in Class B, C, D, or E surface areas and in which some aircraft are permitted flight under visual flight rules.

(See SPECIAL VFR OPERATIONS.)

(Refer to 14 CFR Part 91.)

SPECIAL VFR FLIGHT [ICAO]– A VFR flight cleared by air traffic control to operate within Class B, C, D, and E surface areas in meteorological conditions below VMC.

SPECIAL VFR OPERATIONS– Aircraft operating in accordance with clearances within Class B, C, D, and E surface areas in weather conditions less than the basic VFR weather minima. Such operations must be requested by the pilot and approved by ATC.

(See SPECIAL VFR CONDITIONS.)

(See ICAO term SPECIAL VFR FLIGHT.)

SPECIALIST–PROVIDED SERVICES–
Services delivered directly by a flight service specialist via ground/ground communication, air/ground communication, in–person, or technology (for example, speech–to–text, email, or short message service).

SPEED–

(See AIRSPEED.)

(See GROUND SPEED.)

SPEED ADJUSTMENT– An ATC procedure used to request pilots to adjust aircraft speed to a specific value for the purpose of providing desired spacing. Pilots are expected to maintain a speed of plus or minus 10 knots or 0.02 Mach number of the specified speed. Examples of speed adjustments are:

a. "Increase/reduce speed to Mach point (number)."

b. "Increase/reduce speed to (speed in knots)" or "Increase/reduce speed (number of knots) knots."

SPEED ADVISORY– Speed advisories that are generated within Time–Based Flow Management to assist controllers to meet the Scheduled Time of Arrival (STA) at the meter fix/meter arc. See also Ground–Based Interval Management–Spacing (GIM–S) Speed Advisory.

SPEED BRAKES– Moveable aerodynamic devices on aircraft that reduce airspeed during descent and landing.

SPEED SEGMENTS– Portions of the arrival route between the transition point and the vertex along the optimum flight path for which speeds and altitudes are specified. There is one set of arrival speed segments adapted from each transition point to each vertex. Each set may contain up to six segments.

SPOOFING− Denotes emissions of GNSS−like signals that may be acquired and tracked in combination with or instead of the intended signals by civil receivers. The onset of spoofing effects can be instantaneous or delayed, and effects can persist after the spoofing has ended. Spoofing can result in false and potentially confusing, or hazardously misleading, position, navigation, and/or date/time information in addition to loss of GNSS use.

SQUAWK (Mode, Code, Function)− Used by ATC to instruct a pilot to activate the aircraft transponder and ADS−B Out with altitude reporting enabled, or (military) to activate only specific modes, codes, or functions. Examples: "Squawk five seven zero seven;" "Squawk three/alpha, two one zero five."
(See TRANSPONDER.)

STA−
(See SCHEDULED TIME OF ARRIVAL.)

STAGING/QUEUING− The placement, integration, and segregation of departure aircraft in designated movement areas of an airport by departure fix, EDCT, and/or restriction.

STAND BY− Means the controller or pilot must pause for a few seconds, usually to attend to other duties of a higher priority. Also means to wait as in "stand by for clearance." The caller should reestablish contact if a delay is lengthy. "Stand by" is not an approval or denial.

STANDARD INSTRUMENT APPROACH PROCEDURE (SIAP)−
(See INSTRUMENT APPROACH PROCEDURE.)

STANDARD INSTRUMENT DEPARTURE (SID)− A preplanned instrument flight rule (IFR) air traffic control (ATC) departure procedure printed for pilot/controller use in graphic form to provide obstacle clearance and a transition from the terminal area to the appropriate en route structure. SIDs are primarily designed for system enhancement to expedite traffic flow and to reduce pilot/controller workload. ATC clearance must always be received prior to flying a SID.
(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)
(See OBSTACLE DEPARTURE PROCEDURE.)
(Refer to AIM.)

STANDARD RATE TURN− A turn of three degrees per second.

STANDARD TERMINAL ARRIVAL (STAR)− A preplanned instrument flight rule (IFR) air traffic control arrival procedure published for pilot use in graphic and/or textual form. STARs provide transition from the en route structure to an outer fix or an instrument approach fix/arrival waypoint in the terminal area.

STANDARD TERMINAL ARRIVAL CHARTS−
(See AERONAUTICAL CHART.)

STANDARD TERMINAL AUTOMATION REPLACEMENT SYSTEM (STARS)−
(See DTAS.)

STAR−
(See STANDARD TERMINAL ARRIVAL.)

STATE AIRCRAFT− Aircraft used in military, customs and police service, in the exclusive service of any government or of any political subdivision thereof, including the government of any state, territory, or possession of the United States or the District of Columbia, but not including any government-owned aircraft engaged in carrying persons or property for commercial purposes.

STATIC RESTRICTIONS− Those restrictions that are usually not subject to change, fixed, in place, and/or published.

STATIONARY AIRSPACE RESERVATION− The term used in oceanic ATC for airspace that encompasses activities in a fixed volume of airspace to be occupied for a specified time period. Stationary Airspace Reservations may include activities such as special tests of weapons systems or equipment; certain U.S. Navy carrier, fleet, and anti−submarine operations; rocket, missile, and drone operations; and certain aerial refueling or similar operations.
(See STATIONARY ALTITUDE RESERVATION.)

STATIONARY ALTITUDE RESERVATION (STATIONARY ALTRV)− An altitude reservation which encompasses activities in a fixed volume of airspace to be occupied for a specified time period. Stationary ALTRVs may include activities such as special tests of weapons systems or equipment; certain U.S. Navy carrier, fleet, and anti−submarine operations; rocket, missile, and drone operations; and certain aerial refueling or similar operations.

STEP TAXI− To taxi a float plane at full power or high RPM.

STEP TURN− A maneuver used to put a float plane in a planing configuration prior to entering an active sea lane for takeoff. The STEP TURN maneuver should only be used upon pilot request.

STEPDOWN FIX− A fix permitting additional descent within a segment of an instrument approach procedure by identifying a point at which a controlling obstacle has been safely overflown.

STEREO ROUTE− A routinely used route of flight established by users and ARTCCs identified by a coded name; e.g., ALPHA 2. These routes minimize flight plan handling and communications.

STNR ALT RESERVATION− An abbreviation for Stationary Altitude Reservation commonly used in NOTAMs.
(See STATIONARY ALTITUDE RESERVATION.)

STOL AIRCRAFT−
(See SHORT TAKEOFF AND LANDING AIRCRAFT.)

STOP ALTITUDE SQUAWK− Used by ATC to instruct a pilot to turn off the automatic altitude reporting feature of the aircraft transponder and ADS−B Out. It is issued when a verbally reported altitude varies by 300 feet or more from the automatic altitude report.
(See ALTITUDE READOUT.)
(See TRANSPONDER.)

STOP AND GO− A procedure wherein an aircraft will land, make a complete stop on the runway, and then commence a takeoff from that point.
(See LOW APPROACH.)
(See OPTION APPROACH.)

STOP BURST−
(See STOP STREAM.)

STOP BUZZER−
(See STOP STREAM.)

STOP SQUAWK (Mode or Code)− Used by ATC to instruct a pilot to stop transponder and ADS−B transmissions, or to turn off only specified functions of the aircraft transponder (military).
(See STOP ALTITUDE SQUAWK.)
(See TRANSPONDER.)

STOP STREAM− Used by ATC to request a pilot to suspend electronic attack activity.
(See JAMMING.)

STOPOVER FLIGHT PLAN− A flight plan format which permits in a single submission the filing of a sequence of flight plans through interim full-stop destinations to a final destination.

STOPWAY− An area beyond the takeoff runway no less wide than the runway and centered upon the extended centerline of the runway, able to support the airplane during an aborted takeoff, without causing structural damage to the airplane, and designated by the airport authorities for use in decelerating the airplane during an aborted takeoff.

STRAIGHT-IN APPROACH IFR− An instrument approach wherein final approach is begun without first having executed a procedure turn, not necessarily completed with a straight-in landing or made to straight-in landing minimums.
(See LANDING MINIMUMS.)
(See STRAIGHT-IN APPROACH VFR.)
(See STRAIGHT-IN LANDING.)

STRAIGHT-IN APPROACH VFR− Entry into the traffic pattern by interception of the extended runway centerline (final approach course) without executing any other portion of the traffic pattern.
(See TRAFFIC PATTERN.)

STRAIGHT-IN LANDING− A landing made on a runway aligned within 30° of the final approach course following completion of an instrument approach.
(See STRAIGHT-IN APPROACH IFR.)

STRAIGHT-IN LANDING MINIMUMS−
(See LANDING MINIMUMS.)

STRAIGHT-IN MINIMUMS−
(See STRAIGHT-IN LANDING MINIMUMS.)

STRATEGIC PLANNING− Planning whereby solutions are sought to resolve potential conflicts.

sUAS−
(See SMALL UNMANNED AIRCRAFT SYSTEM.)

SUBSTITUTE ROUTE− A route assigned to pilots when any part of an airway or route is unusable because of NAVAID status. These routes consist of:

a. Substitute routes which are shown on U.S. Government charts.

b. Routes defined by ATC as specific NAVAID radials or courses.

c. Routes defined by ATC as direct to or between NAVAIDs.

SUNSET AND SUNRISE− The mean solar times of sunset and sunrise as published in the Nautical Almanac, converted to local standard time for the locality concerned. Within Alaska, the end of evening civil twilight and the beginning of morning civil twilight, as defined for each locality.

SUPPLEMENTAL WEATHER SERVICE LOCATION− Airport facilities staffed with contract personnel who take weather observations and provide current local weather to pilots via telephone or radio. (All other services are provided by the parent FSS.)

SUPPS− Refers to ICAO Document 7030 Regional Supplementary Procedures. SUPPS contain procedures for each ICAO Region which are unique to that Region and are not covered in the worldwide provisions identified in the ICAO Air Navigation Plan. Procedures contained in Chapter 8 are based in part on those published in SUPPS.

SURFACE AREA− The airspace contained by the lateral boundary of the Class B, C, D, or E airspace designated for an airport that begins at the surface and extends upward.

SURFACE METERING PROGRAM− A capability within Terminal Flight Data Manager that provides the user with the ability to tactically manage surface traffic flows through adjusting desired minimum and maximum departure queue lengths to balance surface demand with capacity. When a demand/capacity imbalance for a surface resource is predicted, a metering procedure is recommended.

SURFACE VIEWER− A capability within the Traffic Flow Management System that provides situational awareness for a user−selected airport. The Surface Viewer displays a top−down view of an airport depicting runways, taxiways, gate areas, ramps, and buildings. The display also includes icons representing aircraft and vehicles currently on the surface, with identifying information. In addition, the display includes current airport configuration information such as departure/arrival runways and airport departure/arrival rates.

SURPIC− A description of surface vessels in the area of a Search and Rescue incident including their predicted positions and their characteristics.

(Refer to FAA Order JO 7110.65, Para 10−6−4, INFLIGHT CONTINGENCIES.)

SURVEILLANCE APPROACH− An instrument approach wherein the air traffic controller issues instructions, for pilot compliance, based on aircraft position in relation to the final approach course (azimuth), and the distance (range) from the end of the runway as displayed on the controller's radar scope. The controller will provide recommended altitudes on final approach if requested by the pilot.

(Refer to AIM.)

SURVEILLANCE ENHANCED SEARCH AND RESCUE (SE SAR)– An automated service used to enhance search and rescue operations that provides federal contract flight service specialists direct information from the aircraft's registered tracking device.

SUSPICIOUS UAS– Suspicious UAS operations may include operating without authorization, loitering in the vicinity of sensitive locations, (e.g., national security, law enforcement facilities, and critical infrastructure), or disrupting normal air traffic operations resulting in runway changes, ground stops, pilot evasive action, etc. The report of a UAS operation alone does not constitute suspicious activity. Development of a comprehensive list of suspicious activities is not possible due to the vast number of situations that could be considered suspicious. ATC must exercise sound judgment when identifying situations that could constitute or indicate a suspicious activity.

SWAP−

(See SEVERE WEATHER AVOIDANCE PLAN.)

SWSL−

(See SUPPLEMENTAL WEATHER SERVICE LOCATION.)

SYSTEM STRATEGIC NAVIGATION− Military activity accomplished by navigating along a preplanned route using internal aircraft systems to maintain a desired track. This activity normally requires a lateral route width of 10 NM and altitude range of 1,000 feet to 6,000 feet AGL with some route segments that permit terrain following.

T

TACAN−
(See TACTICAL AIR NAVIGATION.)

TACAN-ONLY AIRCRAFT− An aircraft, normally military, possessing TACAN with DME but no VOR navigational system capability. Clearances must specify TACAN or VORTAC fixes and approaches.

TACTICAL AIR NAVIGATION (TACAN)− An ultra-high frequency electronic rho-theta air navigation aid which provides suitably equipped aircraft a continuous indication of bearing and distance to the TACAN station.
(See VORTAC.)
(Refer to AIM.)

TAILWIND− Any wind more than 90 degrees to the longitudinal axis of the runway. The magnetic direction of the runway shall be used as the basis for determining the longitudinal axis.

TAKEOFF AREA−
(See LANDING AREA.)

TAKEOFF DISTANCE AVAILABLE (TODA)– The takeoff run available plus the length of any remaining runway or clearway beyond the far end of the takeoff run available.
(See ICAO term TAKEOFF DISTANCE AVAILABLE.)

TAKEOFF DISTANCE AVAILABLE [ICAO]− The length of the takeoff run available plus the length of the clearway, if provided.

TAKEOFF HOLD LIGHTS (THL)– The THL system is composed of in-pavement lighting in a double, longitudinal row of lights aligned either side of the runway centerline. The lights are focused toward the arrival end of the runway at the "line up and wait" point, and they extend for 1,500 feet in front of the holding aircraft. Illuminated red lights indicate to an aircraft in position for takeoff or rolling that it is unsafe to takeoff because the runway is occupied or about to be occupied by an aircraft or vehicle.

TAKEOFF ROLL − The process whereby an aircraft is aligned with the runway centerline and the aircraft is moving with the intent to take off. For helicopters, this pertains to the act of becoming airborne after departing a takeoff area.

TAKEOFF RUN AVAILABLE (TORA) – The runway length declared available and suitable for the ground run of an airplane taking off.
(See ICAO term TAKEOFF RUN AVAILABLE.)

TAKEOFF RUN AVAILABLE [ICAO]− The length of runway declared available and suitable for the ground run of an aeroplane take-off.

TARGET− The indication shown on a display resulting from a primary radar return, a radar beacon reply, or an ADS−B report. The specific target symbol presented to ATC may vary based on the surveillance source and automation platform.
(See ASSOCIATED.)
(See DIGITAL TARGET.)
(See DIGITIZED RADAR TARGET.)
(See FUSED TARGET.)
(See PRIMARY RADAR TARGET.)
(See RADAR.)
(See SECONDARY RADAR TARGET.)
(See ICAO term TARGET.)
(See UNASSOCIATED.)

TARGET [ICAO]− In radar:

a. Generally, any discrete object which reflects or retransmits energy back to the radar equipment.

b. Specifically, an object of radar search or surveillance.

TARGET RESOLUTION− A process to ensure that correlated radar targets do not touch. Target resolution must be applied as follows:

a. Between the edges of two primary targets or the edges of the ASR-9/11 primary target symbol.

b. Between the end of the beacon control slash and the edge of a primary target.

c. Between the ends of two beacon control slashes.

Note 1: Mandatory traffic advisories and safety alerts must be issued when this procedure is used.

Note 2: This procedure must not be used when utilizing mosaic radar systems or multi−sensor mode.

TARGET SYMBOL−
(See TARGET.)
(See ICAO term TARGET.)

TARMAC DELAY− The holding of an aircraft on the ground either before departure or after landing with no opportunity for its passengers to deplane.

TARMAC DELAY AIRCRAFT− An aircraft whose pilot−in−command has requested to taxi to the ramp, gate, or alternate deplaning area to comply with the Three−hour Tarmac Rule.

TARMAC DELAY REQUEST− A request by the pilot−in−command to taxi to the ramp, gate, or alternate deplaning location to comply with the Three−hour Tarmac Rule.

TAS−
(See TERMINAL AUTOMATION SYSTEMS.)

TAWS−
(See TERRAIN AWARENESS WARNING SYSTEM.)

TAXI− The movement of an airplane under its own power on the surface of an airport (14 CFR Section 135.100 [Note]). Also, it describes the surface movement of helicopters equipped with wheels.
(See AIR TAXI.)
(See HOVER TAXI.)
(Refer to 14 CFR Section 135.100.)
(Refer to AIM.)

TAXI PATTERNS− Patterns established to illustrate the desired flow of ground traffic for the different runways or airport areas available for use.

TBM−
(See TIME−BASED MANAGEMENT.)

TBO−
(See TRAJECTORY−BASED OPERATIONS.)

TCAS−
(See TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM.)

TCH−
(See THRESHOLD CROSSING HEIGHT.)

TDLS−
(See TERMINAL DATA LINK SYSTEM.)

TDZE−
(See TOUCHDOWN ZONE ELEVATION.)

TEMPORARY FLIGHT RESTRICTION (TFR)− A TFR is a regulatory action issued by the FAA via the U.S. NOTAM System, under the authority of United States Code, Title 49. TFRs are issued within the sovereign airspace of the United States and its territories to restrict certain aircraft from operating within a defined area on a temporary basis to protect persons or property in the air or on the ground. While not all inclusive, TFRs may be issued for disaster or hazard situations such as: toxic gas leaks or spills, fumes from flammable agents, aircraft accident/incident sites, aviation or ground resources engaged in wildfire suppression, or aircraft relief activities_following a disaster. TFRs may also be issued in support of VIP movements, for reasons of national security; or when determined necessary for the management of air traffic in the vicinity of aerial demonstrations or major sporting events. NAS users or other interested parties should contact a FSS for TFR information. Additionally, TFR information can be found in automated briefings, NOTAM publications, and on the internet at http://www.faa.gov. The FAA also distributes TFR information to aviation user groups for further dissemination.

TERMINAL AREA− A general term used to describe airspace in which approach control service or airport traffic control service is provided.

TERMINAL AREA FACILITY− A facility providing air traffic control service for arriving and departing IFR, VFR, Special VFR, and on occasion en route aircraft.

(See APPROACH CONTROL FACILITY.)
(See TOWER.)

TERMINAL AUTOMATION SYSTEMS (TAS)− TAS is used to identify the numerous automated tracking systems including STARS and MEARTS.

TERMINAL DATA LINK SYSTEM (TDLS)− A system that provides Digital Automatic Terminal Information Service (D−ATIS) both on a specified radio frequency and also, for subscribers, in a text message via data link to the cockpit or to a gate printer. TDLS also provides Pre−departure Clearances (PDC), at selected airports, to subscribers, through a service provider, in text to the cockpit or to a gate printer. In addition, TDLS will emulate the Flight Data Input/Output (FDIO) information within the control tower.

TERMINAL FLIGHT DATA MANAGER (TFDM)− An integrated tower flight data automation system to provide improved airport surface and terminal airspace management. TFDM enhances traffic flow management data integration with Time−Based Flow Management (TBFM) and Traffic Flow Management System (TFMS) to enable airlines, controllers, and airports to share and exchange real−time data. This improves surface traffic management and enhances capabilities of TFMS and TBFM. TFDM assists the Tower personnel with surface Traffic Flow Management (TFM) and Collaborative Decision Making (CDM) and enables a fundamental change in the Towers from a local airport−specific operation to a NAS−connected metering operation. The single platform consolidates multiple Tower automation systems, including: Departure Spacing Program (DSP), Airport Resource Management Tool (ARMT), Electronic Flight Strip Transfer System (EFSTS), and Surface Movement Advisor (SMA). TFDM data, integrated with other FAA systems such as TBFM and TFMS, allows airlines, controllers, and airports to manage the flow of aircraft more efficiently through all phases of flight from departure to arrival gate.

TERMINAL RADAR SERVICE AREA− Airspace surrounding designated airports wherein ATC provides radar vectoring, sequencing, and separation on a full-time basis for all IFR and participating VFR aircraft. The AIM contains an explanation of TRSA. TRSAs are depicted on VFR aeronautical charts. Pilot participation is urged but is not mandatory.

TERMINAL SEQUENCING AND SPACING (TSAS)− Extends scheduling and metering capabilities into the terminal area and provides metering automation tools to terminal controllers and terminal traffic management personnel. Those controllers and traffic management personnel become active participants in time−based metering operations as they work to deliver aircraft accurately to Constraint Satisfaction Points within terminal airspace to include the runway in accordance with scheduled times at those points. Terminal controllers are better able to utilize efficient flight paths, such as Standard Instrument Approach Procedures (SIAPs) that require a Navigational Specification (NavSpec) of RNP APCH with Radius−to−Fix (RF) legs, or Advanced RNP

(A−RNP), through tools that support the merging of mixed−equipage traffic flows. For example, merging aircraft flying RNP APCH AR with RF, A−RNP, and non−RNP approach procedures. Additional fields in the flight plan will identify those flights capable of flying the RNP APCH with RF or A−RNP procedures, and those flights will be scheduled for those types of procedures when available. TSAS will schedule these and the non−RNP aircraft to a common merge point. Terminal traffic management personnel have improved situation awareness using displays that allow for the monitoring of terminal metering operations, similar to the displays used today by center traffic management personnel to monitor en route metering operations.

TERMINAL VFR RADAR SERVICE− A national program instituted to extend the terminal radar services provided instrument flight rules (IFR) aircraft to visual flight rules (VFR) aircraft. The program is divided into four types service referred to as basic radar service, terminal radar service area (TRSA) service, Class B service and Class C service. The type of service provided at a particular location is contained in the Chart Supplement.

a. Basic Radar Service− These services are provided for VFR aircraft by all commissioned terminal radar facilities. Basic radar service includes safety alerts, traffic advisories, limited radar vectoring when requested by the pilot, and sequencing at locations where procedures have been established for this purpose and/or when covered by a letter of agreement. The purpose of this service is to adjust the flow of arriving IFR and VFR aircraft into the traffic pattern in a safe and orderly manner and to provide traffic advisories to departing VFR aircraft.

b. TRSA Service− This service provides, in addition to basic radar service, sequencing of all IFR and participating VFR aircraft to the primary airport and separation between all participating VFR aircraft. The purpose of this service is to provide separation between all participating VFR aircraft and all IFR aircraft operating within the area defined as a TRSA.

c. Class C Service− This service provides, in addition to basic radar service, approved separation between IFR and VFR aircraft, and sequencing of VFR aircraft, and sequencing of VFR arrivals to the primary airport.

d. Class B Service− This service provides, in addition to basic radar service, approved separation of aircraft based on IFR, VFR, and/or weight, and sequencing of VFR arrivals to the primary airport(s).

(See CONTROLLED AIRSPACE.)
(See TERMINAL RADAR SERVICE AREA.)
(Refer to AIM.)
(Refer to CHART SUPPLEMENT U.S.)

TERMINAL-VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION (TVOR)− A very high frequency terminal omnirange station located on or near an airport and used as an approach aid.

(See NAVIGATIONAL AID.)
(See VOR.)

TERRAIN AWARENESS WARNING SYSTEM (TAWS)− An on−board, terrain proximity alerting system providing the aircrew ‘Low Altitude warnings’ to allow immediate pilot action.

TERRAIN FOLLOWING− The flight of a military aircraft maintaining a constant AGL altitude above the terrain or the highest obstruction. The altitude of the aircraft will constantly change with the varying terrain and/or obstruction.

TETRAHEDRON− A device normally located on uncontrolled airports and used as a landing direction indicator. The small end of a tetrahedron points in the direction of landing. At controlled airports, the tetrahedron, if installed, should be disregarded because tower instructions supersede the indicator.

(See SEGMENTED CIRCLE.)
(Refer to AIM.)

TF−

(See TERRAIN FOLLOWING.)

TFDM−

(See TERMINAL FLIGHT DATA MANAGER.)

TGUI−

(See TIMELINE GRAPHICAL USER INTERFACE.)

THAT IS CORRECT− The understanding you have is right.

THA−
(See TRANSITIONAL HAZARD AREA.)

THE RECREATIONAL UAS SAFETY TEST (TRUST)− The electronically administered free test required for all recreational UAS operators referred to as the aeronautical knowledge and safety test, under 49 USC §44809 (g).

THREE−HOUR TARMAC RULE– Rule that relates to Department of Transportation (DOT) requirements placed on airlines when tarmac delays are anticipated to reach 3 hours.

360 OVERHEAD−
(See OVERHEAD MANEUVER.)

THRESHOLD− The beginning of that portion of the runway usable for landing.
(See AIRPORT LIGHTING.)
(See DISPLACED THRESHOLD.)

THRESHOLD CROSSING HEIGHT− The theoretical height above the runway threshold at which the aircraft's glideslope antenna would be if the aircraft maintains the trajectory established by the mean ILS glideslope or the altitude at which the calculated glidepath of an RNAV or GPS approaches.
(See GLIDESLOPE.)
(See THRESHOLD.)

THRESHOLD LIGHTS−
(See AIRPORT LIGHTING.)

TIE-IN FACILITY– The FSS primarily responsible for providing FSS services, including telecommunications services for landing facilities or navigational aids located within the boundaries of a flight plan area (FPA). Three-letter identifiers are assigned to each FSS/FPA and are annotated as tie-in facilities in the Chart Supplement and FAA Order JO 7350.9, Location Identifiers. Large consolidated FSS facilities may have many tie-in facilities or FSS sectors within one facility.
(See FLIGHT PLAN AREA.)
(See FLIGHT SERVICE STATION.)

TIME−BASED FLOW MANAGEMENT (TBFM)− A foundational Decision Support Tool for time−based management in the en route and terminal environments. TBFM's core function is the ability to schedule aircraft within a stream of traffic to reach a defined constraint point (e.g., meter fix/meter arc) at specified times, creating a time−ordered sequence of traffic. The scheduled times allow for merging of traffic flows, efficiently utilizing airport and airspace capacity while minimizing coordination and reducing the need for vectoring/holding. The TBFM schedule is calculated using current aircraft estimated time of arrival at key defined constraint points based on wind forecasts, aircraft flight plan, the desired separation at the constraint point and other parameters. The schedule applies spacing only when needed to maintain the desired separation at one or more constraint points. This includes, but is not limited to, Single Center Metering (SCM), Adjacent Center Metering (ACM), En Route Departure Capability (EDC), Integrated Departure/Arrival Capability (IDAC), Ground−based Interval Management−Spacing (GIM−S), Departure Scheduling, and Extended/Coupled Metering.

TIME−BASED MANAGEMENT (TBM)− A methodology for managing the flow of air traffic through the assignment of time at specific points for an aircraft. TBM applies time to manage and condition air traffic flows to mitigate demand/capacity imbalances and enhance efficiency and predictability of the NAS. Where implemented, TBM tools will be used to manage traffic even during periods when demand does not exceed capacity. This will sustain operational predictability and assure the regional/national strategic plan is maintained. TBM uses capabilities within TFMS, TBFM, and TFDM. These programs are designed to achieve a specified interval between aircraft. Different types of programs accommodate different phases of flight.

TIME GROUP− Four digits representing the hour and minutes from the Coordinated Universal Time (UTC) clock. FAA uses UTC for all operations. The term "ZULU" may be used to denote UTC. The word "local" or the time zone equivalent shall be used to denote local when local time is given during radio and telephone communications. When written, a time zone designator is used to indicate local time; e.g., “0205M” (Mountain). The local time may be based on the 24-hour clock system. The day begins at 0000 and ends at 2359.

TIMELINE GRAPHICAL USER INTERFACE (TGUI)− A TBFM display that uses timelines to display the Estimated Time of Arrival and Scheduled Time of Arrival of each aircraft to specified constraint points. The TGUI can also display pre−departure and scheduled aircraft.

TIS−B−
(See TRAFFIC INFORMATION SERVICE−BROADCAST.)

TMI−
(See TRAFFIC MANAGEMENT INITIATIVE.)

TMPA−
(See TRAFFIC MANAGEMENT PROGRAM ALERT.)

TMU−
(See TRAFFIC MANAGEMENT UNIT.)

TOD−
(See TOP OF DESCENT.)

TODA−
(See TAKEOFF DISTANCE AVAILABLE.)
(See ICAO term TAKEOFF DISTANCE AVAILABLE.)

TOI−
(See TRACK OF INTEREST.)

TOP ALTITUDE− In reference to SID published altitude restrictions, the charted “maintain” altitude contained in the procedure description or assigned by ATC.

TOP OF DESCENT (TOD)− The point at which an aircraft begins the initial descent.

TORA−
(See TAKEOFF RUN AVAILABLE.)
(See ICAO term TAKEOFF RUN AVAILABLE.)

TORCHING− The burning of fuel at the end of an exhaust pipe or stack of a reciprocating aircraft engine, the result of an excessive richness in the fuel air mixture.

TOS−
(See TRAJECTORY OPTIONS SET)

TOTAL ESTIMATED ELAPSED TIME [ICAO]− For IFR flights, the estimated time required from takeoff to arrive over that designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced, or, if no navigation aid is associated with the destination aerodrome, to arrive over the destination aerodrome. For VFR flights, the estimated time required from takeoff to arrive over the destination aerodrome.
(See ICAO term ESTIMATED ELAPSED TIME.)

TOUCH-AND-GO− An operation by an aircraft that lands and departs on a runway without stopping or exiting the runway.

TOUCH-AND-GO LANDING−
(See TOUCH-AND-GO.)

TOUCHDOWN−
a. The point at which an aircraft first makes contact with the landing surface.

b. Concerning a precision radar approach (PAR), it is the point where the glide path intercepts the landing surface.

(See ICAO term TOUCHDOWN.)

TOUCHDOWN [ICAO]− The point where the nominal glide path intercepts the runway.

Note: Touchdown as defined above is only a datum and is not necessarily the actual point at which the aircraft will touch the runway.

TOUCHDOWN RVR−

(See VISIBILITY.)

TOUCHDOWN ZONE− The first 3,000 feet of the runway beginning at the threshold. The area is used for determination of Touchdown Zone Elevation in the development of straight-in landing minimums for instrument approaches.

(See ICAO term TOUCHDOWN ZONE.)

TOUCHDOWN ZONE [ICAO]− The portion of a runway, beyond the threshold, where it is intended landing aircraft first contact the runway.

TOUCHDOWN ZONE ELEVATION− The highest elevation in the first 3,000 feet of the landing surface. TDZE is indicated on the instrument approach procedure chart when straight-in landing minimums are authorized.

(See TOUCHDOWN ZONE.)

TOUCHDOWN ZONE LIGHTING−

(See AIRPORT LIGHTING.)

TOWER− A terminal facility that uses air/ground communications, visual signaling, and other devices to provide ATC services to aircraft operating in the vicinity of an airport or on the movement area. Authorizes aircraft to land or takeoff at the airport controlled by the tower or to transit the Class D airspace area regardless of flight plan or weather conditions (IFR or VFR). A tower may also provide approach control services (radar or nonradar).

(See AIRPORT TRAFFIC CONTROL SERVICE.)
(See APPROACH CONTROL FACILITY.)
(See APPROACH CONTROL SERVICE.)
(See MOVEMENT AREA.)
(See TOWER EN ROUTE CONTROL SERVICE.)
(See ICAO term AERODROME CONTROL TOWER.)
(Refer to AIM.)

TOWER EN ROUTE CONTROL SERVICE− The control of IFR en route traffic within delegated airspace between two or more adjacent approach control facilities. This service is designed to expedite traffic and reduce control and pilot communication requirements.

TOWER TO TOWER−

(See TOWER EN ROUTE CONTROL SERVICE.)

TRACEABLE PRESSURE STANDARD− The facility station pressure instrument, with certification/calibration traceable to the National Institute of Standards and Technology. Traceable pressure standards may be mercurial barometers, commissioned ASOS or dual transducer AWOS, or portable pressure standards or DASI.

TRACK− The actual flight path of an aircraft over the surface of the earth.

(See COURSE.)
(See FLIGHT PATH.)
(See ROUTE.)
(See ICAO term TRACK.)

TRACK [ICAO]− The projection on the earth's surface of the path of an aircraft, the direction of which path at any point is usually expressed in degrees from North (True, Magnetic, or Grid).

TRACK OF INTEREST (TOI)− Displayed data representing an airborne object that threatens or has the potential to threaten North America or National Security. Indicators may include, but are not limited to: noncompliance with air traffic control instructions or aviation regulations; extended loss of communications; unusual transmissions or unusual flight behavior; unauthorized intrusion into controlled airspace or an ADIZ; noncompliance with issued flight restrictions/security procedures; or unlawful interference with airborne flight crews, up to and including hijack. In certain circumstances, an object may become a TOI based on specific and credible intelligence pertaining to that particular aircraft/object, its passengers, or its cargo.

TRACK OF INTEREST RESOLUTION− A TOI will normally be considered resolved when: the aircraft/object is no longer airborne; the aircraft complies with air traffic control instructions, aviation regulations, and/or issued flight restrictions/security procedures; radio contact is re−established and authorized control of the aircraft is verified; the aircraft is intercepted and intent is verified to be nonthreatening/nonhostile; TOI was identified based on specific and credible intelligence that was later determined to be invalid or unreliable; or displayed data is identified and characterized as invalid.

TRAFFIC−

a. A term used by a controller to transfer radar identification of an aircraft to another controller for the purpose of coordinating separation action. Traffic is normally issued:

1. In response to a handoff or point out,

2. In anticipation of a handoff or point out, or

3. In conjunction with a request for control of an aircraft.

b. A term used by ATC to refer to one or more aircraft.

TRAFFIC ADVISORIES− Advisories issued to alert pilots to other known or observed air traffic which may be in such proximity to the position or intended route of flight of their aircraft to warrant their attention. Such advisories may be based on:

a. Visual observation.

b. Observation of radar identified and nonidentified aircraft targets on an ATC radar display, or

c. Verbal reports from pilots or other facilities.

Note 1: The word “traffic” followed by additional information, if known, is used to provide such advisories; e.g., “Traffic, 2 o’clock, one zero miles, southbound, eight thousand.”

Note 2: Traffic advisory service will be provided to the extent possible depending on higher priority duties of the controller or other limitations; e.g., radar limitations, volume of traffic, frequency congestion, or controller workload. Radar/ nonradar traffic advisories do not relieve the pilot of his/her responsibility to see and avoid other aircraft. Pilots are cautioned that there are many times when the controller is not able to give traffic advisories concerning all traffic in the aircraft’s proximity; in other words, when a pilot requests or is receiving traffic advisories, he/she should not assume that all traffic will be issued.

(Refer to AIM.)

TRAFFIC ALERT (aircraft call sign), TURN (left/right) IMMEDIATELY, (climb/descend) AND MAINTAIN (altitude).

(See SAFETY ALERT.)

TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM (TCAS)− An airborne collision avoidance system based on radar beacon signals which operates independent of ground-based equipment. TCAS-I generates traffic advisories only. TCAS-II generates traffic advisories, and resolution (collision avoidance) advisories in the vertical plane.

TRAFFIC INFORMATION−

(See TRAFFIC ADVISORIES.)

TRAFFIC INFORMATION SERVICE−BROADCAST (TIS−B)− The broadcast of ATC derived traffic information to ADS−B equipped (1090ES or UAT) aircraft. The source of this traffic information is derived from 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 INITIATIVE (TMI)− Tools used to manage demand with capacity in the National Airspace System (NAS.) TMIs can be used to manage NAS resources (e.g., airports, sectors, airspace) or to increase the efficiency of the operation. TMIs can be either tactical (i.e., short term) or strategic (i.e., long term), depending on the type of TMI and the operational need.

TRAFFIC MANAGEMENT PROGRAM ALERT− A term used in a Notice to Air Missions (NOTAM) issued in conjunction with a special traffic management program to alert pilots to the existence of the program and to refer them to a special traffic management program advisory message for program details. The contraction TMPA is used in NOTAM text.

TRAFFIC MANAGEMENT UNIT− The entity in ARTCCs and designated terminals directly involved in the active management of facility traffic. Usually under the direct supervision of an assistant manager for traffic management.

TRAFFIC NO FACTOR− Indicates that the traffic described in a previously issued traffic advisory is no factor.

TRAFFIC NO LONGER OBSERVED− Indicates that the traffic described in a previously issued traffic advisory is no longer depicted on radar, but may still be a factor.

TRAFFIC PATTERN− The traffic flow that is prescribed for aircraft landing at, taxiing on, or taking off from an airport. The components of a typical traffic pattern are upwind leg, crosswind leg, downwind leg, base leg, and final approach.

a. Upwind Leg− A flight path parallel to the landing runway in the direction of landing.

b. Crosswind Leg− A flight path at right angles to the landing runway off its upwind end.

c. Downwind Leg− A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg.

d. Base Leg− A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline.

NOTE−
ATC may instruct a pilot to report a "2−mile left base" to Runway 22. This instruction means that the pilot is expected to maneuver their aircraft into a left base leg that will intercept a straight−in final 2 miles from the approach end of Runway 22 and advise ATC.

REFERENCE−
Pilot's Handbook of Aeronautical Knowledge, FAA−H−8083−25, Chapter 14, Airport Operations, Traffic Patterns.

e. Final Approach− A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. An aircraft making a straight-in approach VFR is also considered to be on final approach.

NOTE−
ATC may instruct a pilot to report "5−mile final" to Runway 22. This instruction means that the pilot should maneuver their aircraft onto a straight−in final and advise ATC when they are five miles from the approach end of Runway 22.

REFERENCE−
Pilot's Handbook of Aeronautical Knowledge, FAA−H−8083−25, Chapter 14, Airport Operations, Traffic Patterns.

(See STRAIGHT-IN APPROACH VFR.)
(See TAXI PATTERNS.)
(See ICAO term AERODROME TRAFFIC CIRCUIT.)
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

TRAFFIC SITUATION DISPLAY (TSD)− TSD is a computer system that receives radar track data from all 20 CONUS ARTCCs, organizes this data into a mosaic display, and presents it on a computer screen. The display allows the traffic management coordinator multiple methods of selection and highlighting of individual aircraft or groups of aircraft. The user has the option of superimposing these aircraft positions over any number of background displays. These background options include ARTCC boundaries, any stratum of en route sector boundaries, fixes, airways, military and other special use airspace, airports, and geopolitical boundaries. By using the TSD, a coordinator can monitor any number of traffic situations or the entire systemwide traffic flows.

TRAJECTORY− A EDST representation of the path an aircraft is predicted to fly based upon a Current Plan or Trial Plan.
(See EN ROUTE DECISION SUPPORT TOOL.)

TRAJECTORY−BASED OPERATIONS (TBO)− An Air Traffic Management method for strategically planning and managing flights throughout the operation by using Time−Based Management (TBM), information exchange between air and ground systems, and the aircraft's ability to fly trajectories in time and space. Aircraft trajectory is defined in four dimensions – latitude, longitude, altitude, and time.

TRAJECTORY MODELING− The automated process of calculating a trajectory.

TRAJECTORY OPTIONS SET (TOS)− A TOS is an electronic message, submitted by the operator, that is used by the Collaborative Trajectory Options Program (CTOP) to manage the airspace captured in the traffic management program. The TOS will allow the operator to express the route and delay trade-off options that they are willing to accept.

TRANSFER OF CONTROL− That action whereby the responsibility for the separation of an aircraft is transferred from one controller to another.
(See ICAO term TRANSFER OF CONTROL.)

TRANSFER OF CONTROL [ICAO]− Transfer of responsibility for providing air traffic control service.

TRANSFERRING CONTROLLER− A controller/facility transferring control of an aircraft to another controller/facility.
(See ICAO term TRANSFERRING UNIT/CONTROLLER.)

TRANSFERRING FACILITY−
(See TRANSFERRING CONTROLLER.)

TRANSFERRING UNIT/CONTROLLER [ICAO]− Air traffic control unit/air traffic controller in the process of transferring the responsibility for providing air traffic control service to an aircraft to the next air traffic control unit/air traffic controller along the route of flight.
Note: See definition of accepting unit/controller.

TRANSITION− The general term that describes the change from one phase of flight or flight condition to another; e.g., transition from en route flight to the approach or transition from instrument flight to visual flight.

TRANSITION POINT− A point at an adapted number of miles from the vertex at which an arrival aircraft would normally commence descent from its en route altitude. This is the first fix adapted on the arrival speed segments.

TRANSITIONAL AIRSPACE− That portion of controlled airspace wherein aircraft change from one phase of flight or flight condition to another.

TRANSITIONAL HAZARD AREA (THA)– Used by ATC. Airspace normally associated with an Aircraft Hazard Area within which the flight of aircraft is subject to restrictions.
(See AIRCRAFT HAZARD AREA.)
(See CONTINGENCY HAZARD AREA.)
(See REFINED HAZARD AREA.)

TRANSMISSOMETER– An apparatus used to determine visibility by measuring the transmission of light through the atmosphere. It is the measurement source for determining runway visual range (RVR).
(See VISIBILITY.)

TRANSMITTING IN THE BLIND– A transmission from one station to other stations in circumstances where two-way communication cannot be established, but where it is believed that the called stations may be able to receive the transmission.

TRANSPONDER– The airborne radar beacon receiver/transmitter portion of the Air Traffic Control Radar Beacon System (ATCRBS) which automatically receives radio signals from interrogators on the ground, and selectively replies with a specific reply pulse or pulse group only to those interrogations being received on the mode to which it is set to respond.
(See INTERROGATOR.)
(See ICAO term TRANSPONDER.)
(Refer to AIM.)

TRANSPONDER [ICAO]– A receiver/transmitter which will generate a reply signal upon proper interrogation; the interrogation and reply being on different frequencies.

TRANSPONDER CODES–
(See CODES.)

TRANSPONDER OBSERVED – Phraseology used to inform a VFR pilot the aircraft's assigned beacon code and position have been observed. Specifically, this term conveys to a VFR pilot the transponder reply has been observed and its position correlated for transit through the designated area.

TRIAL PLAN– A proposed amendment which utilizes automation to analyze and display potential conflicts along the predicted trajectory of the selected aircraft.

TRSA–
(See TERMINAL RADAR SERVICE AREA.)

TRUST–
(See THE RECREATIONAL UAS SAFETY TEST.)

TSAS–
(See TERMINAL SEQUENCING AND SPACING.)

TSD–
(See TRAFFIC SITUATION DISPLAY.)

TURBOJET AIRCRAFT– An aircraft having a jet engine in which the energy of the jet operates a turbine which in turn operates the air compressor.

TURBOPROP AIRCRAFT– An aircraft having a jet engine in which the energy of the jet operates a turbine which drives the propeller.

TURBULENCE– An atmospheric phenomenon that causes changes in aircraft altitude, attitude, and or airspeed with aircraft reaction depending on intensity. Pilots report turbulence intensity according to aircraft's reaction as follows:

a. Light – Causes slight, erratic changes in altitude and or attitude (pitch, roll, or yaw).

b. Moderate– Similar to Light but of greater intensity. Changes in altitude and or attitude occur but the aircraft remains in positive control at all times. It usually causes variations in indicated airspeed.

c. Severe− Causes large, abrupt changes in altitude and or attitude. It usually causes large variations in indicated airspeed. Aircraft may be momentarily out of control.

d. Extreme− The aircraft is violently tossed about and is practically impossible to control. It may cause structural damage.

(See CHOP.)
(Refer to AIM.)

TURN ANTICIPATION− (maneuver anticipation).

TVOR−
(See TERMINAL-VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION.)

TWO-WAY RADIO COMMUNICATIONS FAILURE−
(See LOST COMMUNICATIONS.)

U

UAM−
(See URBAN AIR MOBILITY.)

UAS FACILITY MAP (UASFM)− Defined grid squares showing maximum altitudes around airports where the FAA may authorize Part 107 sUAS operations without additional safety analysis. The maps should be consulted prior to conducting UAS operations (Part 91, Part 107 or Section 44809) in controlled airspace. The UASFM will aid in determining if the airspace authorization or waivers are necessary. UASFM(s) are charted on the UAS Data Delivery System (UDDS) at the following website address: https://faa.maps.arcgis.com/apps/webappviewer/index.html?id=9c2e4406710048e19806ebf6a06754ad.

UAS TEST SITE− Independently owned UAS test & research sites, recognized by the FAA.

UAS TRAFFIC MANAGEMENT (UTM)−The unmanned aircraft traffic management ecosystem that will allow multiple low altitude BVLOS operations and which is separate from, but complementary to, FAA's Air Traffic Control System.

UASFM−
(See UAS FACILITY MAP.)

UHF−
(See ULTRAHIGH FREQUENCY.)

ULTRAHIGH FREQUENCY (UHF)− The frequency band between 300 and 3,000 MHz. The bank of radio frequencies used for military air/ground voice communications. In some instances this may go as low as 225 MHz and still be referred to as UHF.

ULTRALIGHT VEHICLE− A single-occupant aeronautical vehicle operated for sport or recreational purposes which does not require FAA registration, an airworthiness certificate, or pilot certification. Operation of an ultralight vehicle in certain airspace requires authorization from ATC.
(Refer to 14 CFR Part 103.)

***UNABLE*−** Indicates inability to comply with a specific instruction, request, or clearance.

UNASSOCIATED− A radar target that does not display a data block with flight identification and altitude information.
(See ASSOCIATED.)

UNCONTROLLED AIRSPACE− Airspace in which aircraft are not subject to controlled airspace (Class A, B, C, D, or E) separation criteria.

UNDER THE HOOD− Indicates that the pilot is using a hood to restrict visibility outside the cockpit while simulating instrument flight. An appropriately rated pilot is required in the other control seat while this operation is being conducted.
(Refer to 14 CFR Part 91.)

UNFROZEN− The Scheduled Time of Arrival (STA) tags, which are still being rescheduled by the time−based flow management (TBFM) calculations. The aircraft will remain unfrozen until the time the corresponding estimated time of arrival (ETA) tag passes the preset freeze horizon for that aircraft's stream class. At this point the automatic rescheduling will stop, and the STA becomes "frozen."

UNICOM− A nongovernment communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOMs are shown on aeronautical charts and publications.
(See CHART SUPPLEMENT.)
(Refer to AIM.)

UNMANNED AIRCRAFT (UA)- A device used or intended to be used for flight that has no onboard pilot. This device can be any type of airplane, helicopter, airship, or powered-lift aircraft. Unmanned free balloons, moored balloons, tethered aircraft, gliders, and unmanned rockets are not considered to be a UA.

UNMANNED AIRCRAFT SYSTEM (UAS)- An unmanned aircraft and its associated elements related to safe operations, which may include control stations (ground, ship, or air based), control links, support equipment, payloads, flight termination systems, and launch/recovery equipment. It consists of three elements: unmanned aircraft, control station, and data link.

UNPUBLISHED ROUTE− A route for which no minimum altitude is published or charted for pilot use. It may include a direct route between NAVAIDs, a radial, a radar vector, or a final approach course beyond the segments of an instrument approach procedure.

(See PUBLISHED ROUTE.)
(See ROUTE.)

UNRELIABLE (GPS/WAAS)− An advisory to pilots indicating the expected level of service of the GPS and/or WAAS may not be available. Pilots must then determine the adequacy of the signal for desired use.

UNSERVICEABLE (U/S)

(See OUT OF SERVICE/UNSERVICEABLE.)

UPWIND LEG−

(See TRAFFIC PATTERN.)

URBAN AIR MOBILITY (UAM)− A subset of Advanced Air Mobility (AAM), referring to an air transportation system utilizing highly automated aircraft to transport passengers or cargo in urban/suburban areas.

URGENCY− A condition of being concerned about safety and of requiring timely but not immediate assistance; a potential distress condition.

(See ICAO term URGENCY.)

URGENCY [ICAO]− A condition concerning the safety of an aircraft or other vehicle, or of person on board or in sight, but which does not require immediate assistance.

USAFIB−

(See ARMY AVIATION FLIGHT INFORMATION BULLETIN.)

UTM−

(See UAS TRAFFIC MANAGEMENT.)

V

VASI−
(See VISUAL APPROACH SLOPE INDICATOR.)

VCOA−
(See VISUAL CLIMB OVER AIRPORT.)

VDP−
(See VISUAL DESCENT POINT.)

VECTOR− A heading issued to an aircraft to provide navigational guidance by radar.
(See ICAO term RADAR VECTORING.)

VERIFY− Request confirmation of information; e.g., "verify assigned altitude."

VERIFY SPECIFIC DIRECTION OF TAKEOFF (OR TURNS AFTER TAKEOFF)− Used by ATC to ascertain an aircraft's direction of takeoff and/or direction of turn after takeoff. It is normally used for IFR departures from an airport not having a control tower. When direct communication with the pilot is not possible, the request and information may be relayed through an FSS, dispatcher, or by other means.
(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)

VERTICAL NAVIGATION (VNAV)− A function of area navigation (RNAV) equipment which calculates, displays, and provides vertical guidance to a profile or path.

VERTICAL SEPARATION− Separation between aircraft expressed in units of vertical distance.
(See SEPARATION.)

VERTICAL TAKEOFF AND LANDING AIRCRAFT (VTOL)− Aircraft capable of vertical climbs and/or descents and of using very short runways or small areas for takeoff and landings. These aircraft include, but are not limited to, helicopters.
(See SHORT TAKEOFF AND LANDING AIRCRAFT.)

VERY HIGH FREQUENCY (VHF)− The frequency band between 30 and 300 MHz. Portions of this band, 108 to 118 MHz, are used for certain NAVAIDs; 118 to 136 MHz are used for civil air/ground voice communications. Other frequencies in this band are used for purposes not related to air traffic control.

VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION−
(See VOR.)

VERY LOW FREQUENCY (VLF)− The frequency band between 3 and 30 kHz.

VFR−
(See VISUAL FLIGHT RULES.)

VFR AIRCRAFT− An aircraft conducting flight in accordance with visual flight rules.
(See VISUAL FLIGHT RULES.)

VFR CONDITIONS− Weather conditions equal to or better than the minimum for flight under visual flight rules. The term may be used as an ATC clearance/instruction only when:

a. An IFR aircraft requests a climb/descent in VFR conditions.

b. The clearance will result in noise abatement benefits where part of the IFR departure route does not conform to an FAA approved noise abatement route or altitude.

c. A pilot has requested a practice instrument approach and is not on an IFR flight plan.

Note: All pilots receiving this authorization must comply with the VFR visibility and distance from cloud criteria in 14 CFR Part 91. Use of the term does not relieve controllers of their responsibility to separate aircraft in

Class B and Class C airspace or TRSAs as required by FAA Order JO 7110.65. When used as an ATC clearance/instruction, the term may be abbreviated "VFR;" e.g., "MAINTAIN VFR," "CLIMB/DESCEND VFR," etc.

VFR FLIGHT−
(See VFR AIRCRAFT.)

VFR MILITARY TRAINING ROUTES (VR)− Routes used by the Department of Defense and associated Reserve and Air Guard units for the purpose of conducting low-altitude navigation and tactical training under VFR below 10,000 feet MSL at airspeeds in excess of 250 knots IAS.

VFR NOT RECOMMENDED− An advisory provided by a flight service station to a pilot during a preflight or inflight weather briefing that flight under visual flight rules is not recommended. To be given when the current and/or forecast weather conditions are at or below VFR minimums. It does not abrogate the pilot's authority to make his/her own decision.

VFR-ON-TOP− ATC authorization for an IFR aircraft to operate in VFR conditions at any appropriate VFR altitude (as specified in 14 CFR and as restricted by ATC). A pilot receiving this authorization must comply with the VFR visibility, distance from cloud criteria, and the minimum IFR altitudes specified in 14 CFR Part 91. The use of this term does not relieve controllers of their responsibility to separate aircraft in Class B and Class C airspace or TRSAs as required by FAA Order JO 7110.65.

VFR TERMINAL AREA CHARTS−
(See AERONAUTICAL CHART.)

VFR WAYPOINT−
(See WAYPOINT.)

VHF−
(See VERY HIGH FREQUENCY.)

VHF OMNIDIRECTIONAL RANGE/TACTICAL AIR NAVIGATION−
(See VORTAC.)

VIDEO MAP− An electronically displayed map on the radar display that may depict data such as airports, heliports, runway centerline extensions, hospital emergency landing areas, NAVAIDs and fixes, reporting points, airway/route centerlines, boundaries, handoff points, special use tracks, obstructions, prominent geographic features, map alignment indicators, range accuracy marks, and/or minimum vectoring altitudes.

VISIBILITY− The ability, as determined by atmospheric conditions and expressed in units of distance, to see and identify prominent unlighted objects by day and prominent lighted objects by night. Visibility is reported as statute miles, hundreds of feet or meters.
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

a. Flight Visibility− The average forward horizontal distance, from the cockpit of an aircraft in flight, at which prominent unlighted objects may be seen and identified by day and prominent lighted objects may be seen and identified by night.

b. Ground Visibility− Prevailing horizontal visibility near the earth's surface as reported by the United States National Weather Service or an accredited observer.

c. Prevailing Visibility− The greatest horizontal visibility equaled or exceeded throughout at least half the horizon circle which need not necessarily be continuous.

d. Runway Visual Range (RVR)− An instrumentally derived value, based on standard calibrations, that represents the horizontal distance a pilot will see down the runway from the approach end. It is based on the sighting of either high intensity runway lights or on the visual contrast of other targets whichever yields the greater visual range. RVR, in contrast to prevailing or runway visibility, is based on what a pilot in a moving aircraft should see looking down the runway. RVR is horizontal visual range, not slant visual range. It is based on the measurement of a transmissometer made near the touchdown point of the instrument runway and is reported in hundreds of feet. RVR, where available, is used in lieu of prevailing visibility in determining minimums for a particular runway.

1. Touchdown RVR− The RVR visibility readout values obtained from RVR equipment serving the runway touchdown zone.

2. Mid-RVR− The RVR readout values obtained from RVR equipment located midfield of the runway.

3. Rollout RVR− The RVR readout values obtained from RVR equipment located nearest the rollout end of the runway.

(See ICAO term FLIGHT VISIBILITY.)
(See ICAO term GROUND VISIBILITY.)
(See ICAO term RUNWAY VISUAL RANGE.)
(See ICAO term VISIBILITY.)

VISIBILITY [ICAO]− The ability, as determined by atmospheric conditions and expressed in units of distance, to see and identify prominent unlighted objects by day and prominent lighted objects by night.

a. Flight Visibility− The visibility forward from the cockpit of an aircraft in flight.

b. Ground Visibility− The visibility at an aerodrome as reported by an accredited observer.

c. Runway Visual Range [RVR]− The range over which the pilot of an aircraft on the centerline of a runway can see the runway surface markings or the lights delineating the runway or identifying its centerline.

VISUAL APPROACH− An approach conducted on an instrument flight rules (IFR) flight plan which authorizes the pilot to proceed visually and clear of clouds to the airport. The pilot must, at all times, have either the airport or the preceding aircraft in sight. This approach must be authorized and under the control of the appropriate air traffic control facility. Reported weather at the airport must be: ceiling at or above 1,000 feet, and visibility of 3 miles or greater.

(See ICAO term VISUAL APPROACH.)

VISUAL APPROACH [ICAO]− An approach by an IFR flight when either part or all of an instrument approach procedure is not completed and the approach is executed in visual reference to terrain.

VISUAL APPROACH SLOPE INDICATOR (VASI)−
(See AIRPORT LIGHTING.)

VISUAL CLIMB OVER AIRPORT (VCOA)− A departure option for an IFR aircraft, operating in visual meteorological conditions equal to or greater than the specified visibility and ceiling, to visually conduct climbing turns over the airport to the published "climb−to" altitude from which to proceed with the instrument portion of the departure. VCOA procedures are developed to avoid obstacles greater than 3 statute miles from the departure end of the runway as an alternative to complying with climb gradients greater than 200 feet per nautical mile. Pilots are responsible to advise ATC as early as possible of the intent to fly the VCOA option prior to departure. These textual procedures are published in the 'Take−Off Minimums and (Obstacle) Departure Procedures' section of the Terminal Procedures Publications and/or appear as an option on a Graphic ODP.

(See AIM.)

VISUAL DESCENT POINT− A defined point on the final approach course of a nonprecision straight-in approach procedure from which normal descent from the MDA to the runway touchdown point may be commenced, provided the approach threshold of that runway, or approach lights, or other markings identifiable with the approach end of that runway are clearly visible to the pilot.

VISUAL FLIGHT RULES− Rules that govern the procedures for conducting flight under visual conditions. The term "VFR" is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

(See INSTRUMENT FLIGHT RULES.)
(See INSTRUMENT METEOROLOGICAL CONDITIONS.)
(See VISUAL METEOROLOGICAL CONDITIONS.)
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

VISUAL HOLDING− The holding of aircraft at selected, prominent geographical fixes which can be easily recognized from the air.
(See HOLDING FIX.)

VISUAL LINE OF SIGHT (VLOS)− Condition of operations wherein the operator maintains continuous, unaided visual contact with the unmanned aircraft.

VISUAL METEOROLOGICAL CONDITIONS− Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling equal to or better than specified minima.
(See INSTRUMENT FLIGHT RULES.)
(See INSTRUMENT METEOROLOGICAL CONDITIONS.)
(See VISUAL FLIGHT RULES.)

VISUAL OBSERVER (VO)− A person who is designated by the remote pilot in command to assist the remote pilot in command and the person operating the flight controls of the small UAS (sUAS) to see and avoid other air traffic or objects aloft or on the ground.

VISUAL SEGMENT−
(See PUBLISHED INSTRUMENT APPROACH PROCEDURE VISUAL SEGMENT.)

VISUAL SEPARATION− A means employed by ATC to separate aircraft in terminal areas and en route airspace in the NAS. There are two ways to effect this separation:

a. The tower controller sees the aircraft involved and issues instructions, as necessary, to ensure that the aircraft avoid each other.

b. A pilot sees the other aircraft involved and upon instructions from the controller provides his/her own separation by maneuvering his/her aircraft as necessary to avoid it. This may involve following another aircraft or keeping it in sight until it is no longer a factor.
(See SEE AND AVOID.)
(Refer to 14 CFR Part 91.)

VLF−
(See VERY LOW FREQUENCY.)

VMC−
(See VISUAL METEOROLOGICAL CONDITIONS.)

VOICE SWITCHING AND CONTROL SYSTEM (VSCS)− A computer controlled switching system that provides air traffic controllers with all voice circuits (air to ground and ground to ground) necessary for air traffic control.
(Refer to AIM.)

VOR− A ground-based electronic navigation aid transmitting very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the National Airspace System. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature. Voice features may be used by ATC or FSS for transmitting instructions/information to pilots.
(See NAVIGATIONAL AID.)
(Refer to AIM.)

VOR TEST SIGNAL−
(See VOT.)

VORTAC− A navigation aid providing VOR azimuth, TACAN azimuth, and TACAN distance measuring equipment (DME) at one site.
(See DISTANCE MEASURING EQUIPMENT.)
(See NAVIGATIONAL AID.)
(See TACAN.)
(See VOR.)
(Refer to AIM.)

VORTICES− Circular patterns of air created by the movement of an airfoil through the air when generating lift. As an airfoil moves through the atmosphere in sustained flight, an area of area of low pressure is created above it. The air flowing from the high pressure area to the low pressure area around and about the tips of the airfoil tends to roll up into two rapidly rotating vortices, cylindrical in shape. These vortices are the most predominant parts of aircraft wake turbulence and their rotational force is dependent upon the wing loading, gross weight, and speed of the generating aircraft. The vortices from medium to super aircraft can be of extremely high velocity and hazardous to smaller aircraft.

(See AIRCRAFT CLASSES.)
(See WAKE TURBULENCE.)
(Refer to AIM.)

VOT− A ground facility which emits a test signal to check VOR receiver accuracy. Some VOTs are available to the user while airborne, and others are limited to ground use only.

(See CHART SUPPLEMENT.)
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

VR−
(See VFR MILITARY TRAINING ROUTES.)

VSCS−
(See VOICE SWITCHING AND CONTROL SYSTEM.)

VTOL AIRCRAFT−
(See VERTICAL TAKEOFF AND LANDING AIRCRAFT.)

W

WA–
(See AIRMET.)
(See WEATHER ADVISORY.)

WAAS–
(See WIDE-AREA AUGMENTATION SYSTEM.)

WAKE RE–CATEGORIZATION (RECAT)– A set of optimized wake separation standards, featuring an increased number of aircraft wake categories, in use at select airports, which allows reduced wake intervals.
(See WAKE TURBULENCE.)

WAKE TURBULENCE– A phenomenon that occurs when an aircraft develops lift and forms a pair of counter–rotating vortices.
(See AIRCRAFT CLASSES.)
(See VORTICES.)
(Refer to AIM.)

WARNING AREA–
(See SPECIAL USE AIRSPACE.)

WAYPOINT– A predetermined geographical position used for route/instrument approach definition, progress reports, published VFR routes, visual reporting points or points for transitioning and/or circumnavigating controlled and/or special use airspace, that is defined relative to a VORTAC station or in terms of latitude/longitude coordinates.

WEATHER ADVISORY– In aviation weather forecast practice, an expression of hazardous weather conditions not predicted in the Aviation Surface Forecast, Aviation Cloud Forecast, or area forecast, as they affect the operation of air traffic and as prepared by the NWS.
(See AIRMET.)
(See GRAPHICAL AIRMEN'S METEOROLOGICAL INFORMATION.)
(See SIGMET.)

WEATHER RECONNAISSANCE AREA (WRA)– A WRA is airspace with defined dimensions and published by Notice to Air Missions, which is established to support weather reconnaissance/research flights. Air traffic control services are not provided within WRAs. Only participating weather reconnaissance/research aircraft from the 53rd Weather Reconnaissance Squadron and National Oceanic and Atmospheric Administration Aircraft Operations Center are permitted to operate within a WRA. A WRA may only be established in airspace within U.S. Flight Information Regions outside of U.S. territorial airspace.

WHEN ABLE–

a. In conjunction with ATC instructions, gives the pilot the latitude to delay compliance until a condition or event has been reconciled. Unlike "pilot discretion," when instructions are prefaced "when able," the pilot is expected to seek the first opportunity to comply.

b. In conjunction with a weather deviation clearance, requires the pilot to determine when he/she is clear of weather, then execute ATC instructions.

c. Once a maneuver has been initiated, the pilot is expected to continue until the specifications of the instructions have been met. "When able," should not be used when expeditious compliance is required.

WIDE-AREA AUGMENTATION SYSTEM (WAAS)– The WAAS is a satellite navigation system consisting of the equipment and software which augments the GPS Standard Positioning Service (SPS). The WAAS provides enhanced integrity, accuracy, availability, and continuity over and above GPS SPS. The differential correction function provides improved accuracy required for precision approach.

WIDE AREA MULTILATERATION (WAM)– A distributed surveillance technology which may utilize any combination of signals from Air Traffic Control Radar Beacon System (ATCRBS) (Modes A and C) and Mode S transponders, and ADS-B transmissions. Multiple geographically dispersed ground sensors measure the time-of-arrival of the transponder messages. Aircraft position is determined by joint processing of the time-difference-of-arrival (TDOA) measurements computed between a reference and the ground stations' measured time-of-arrival.

WILCO− I have received your message, understand it, and will comply with it.

WIND GRID DISPLAY− A display that presents the latest forecasted wind data overlaid on a map of the ARTCC area. Wind data is automatically entered and updated periodically by transmissions from the National Weather Service. Winds at specific altitudes, along with temperatures and air pressure can be viewed.

WIND SHEAR− A change in wind speed and/or wind direction in a short distance resulting in a tearing or shearing effect. It can exist in a horizontal or vertical direction and occasionally in both.

WIND SHEAR ESCAPE− An unplanned abortive maneuver initiated by the pilot in command (PIC) as a result of onboard cockpit systems. Wind shear escapes are characterized by maximum thrust climbs in the low altitude terminal environment until wind shear conditions are no longer detected.

WING TIP VORTICES−
(See VORTICES.)

WORDS TWICE−

a. As a request: "Communication is difficult. Please say every phrase twice."

b. As information: "Since communications are difficult, every phrase in this message will be spoken twice."

WS−
(See SIGMET.)
(See WEATHER ADVISORY.)

WST−
(See CONVECTIVE SIGMET.)
(See WEATHER ADVISORY.)