ASA's 2022 FAR/AIM Update

Changes to the Federal Aviation Regulations occur via the *Federal Register*, which is published daily. The *Aeronautical Information Manual* is updated every 180 days, and Advisory Circulars are revised as the FAA deems necessary. ASA tracks all relevant changes to keep you current and informed: the ASA FAR/AIM Series is published annually, and all Updates are available at **asa2fly.com/farupdate** and through a free email subscription service that notifies you of changes affecting the information printed in your books.

ASA's 2022 *FAR/AIM* book is current through July 1, 2021. With this Update, information is current through **September 23, 2022**.

The *AIM* changes (Change 1 effective December 2, 2021 and Change 2 effective May 19, 2022) begin on page 5.

PART 43
MAINTENANCE, PREVENTIVE MAINTENANCE, REBUILDING, AND ALTERATION

➧ ***Change Date:*** *May 24, 2022*
➧ ***Effective Date:*** *September 21, 2022*
➧ ***Source:*** *Amdt. 43–52, 87 FR 31414*

Amend appendix A to Part 43 by revising paragraph (c)(30)(i) to read as follows:

APPENDIX A TO PART 43—MAJOR ALTERATIONS, MAJOR REPAIRS, AND PREVENTIVE MAINTENANCE

* * * * *

(c) * * *

(30) * * *

(i) They are performed by the holder of at least a private pilot certificate issued under part 61 of this chapter who is the registered owner (including co-owners) of the affected aircraft and who holds a certificate of competency for the affected aircraft (1) issued by the holder of the production certificate for that primary category aircraft that has a special training program approved under §21.24 of this subchapter; or (2) issued by another entity that has a course approved by the Administrator; and

* * * * *

PART 61
CERTIFICATION: PILOTS, FLIGHT INSTRUCTORS, AND GROUND INSTRUCTORS

➧ ***Change Date:*** *November 9, 2021*
➧ ***Effective Date:*** *December 9, 2021*
➧ ***Source:*** *Amdt. 61–149, 86 FR 62087*

Amend §61.35 by revising paragraphs (a)(2) and (a)(3)(iii)(A), removing paragraph (a)(3)(iii)(B), redesignating paragraph (a)(3)(iii)(C) as paragraph (a)(3)(iii)(B), and revising newly-redesignated paragraph (a)(3)(iii)(B). The revised section now reads as follows:

§61.35 Knowledge test: Prerequisites and passing grades.

(a) An applicant for a knowledge test must have:

(1) Received an endorsement, if required by this part, from an authorized instructor certifying that the applicant accomplished the appropriate ground-training or a home-study course required by this part for the certificate or rating sought and is prepared for the knowledge test;

(2) For the knowledge test for an airline transport pilot certificate with an airplane category multiengine class rating, a graduation certificate for the airline transport pilot certification training program specified in §61.156; and

(3) Proper identification at the time of application that contains the applicant's—

(i) Photograph;

(ii) Signature;

(iii) Date of birth, which shows:

(A) For issuance of certificates other than the ATP certificate with an airplane category multiengine class rating, the applicant meets or will meet the age requirements of this part for the certificate sought before the expiration date of the airman knowledge test report; and

(B) For issuance of an ATP certificate with an airplane category multiengine class rating obtained under the aeronautical experience requirements of §61.159 or §61.160, the applicant is at least 18 years of age at the time of the knowledge test;

(iv) If the permanent mailing address is a post office box number, then the applicant must provide a current residential address.

(b) The Administrator shall specify the minimum passing grade for the knowledge test.

Amend §61.39 by revising paragraph (b) introductory text and paragraph (d) introductory text to read as follows:

§61.39 Prerequisites for practical tests.

* * * * *

(b) An applicant for an airline transport pilot certificate with an airplane category multiengine class rating or an airline transport pilot certificate obtained concurrently with a multiengine airplane type rating may take the practical test with an expired knowledge test only if the applicant passed the knowledge test after July 31, 2014, and is employed:

* * * * *

(d) In addition to the requirements in paragraph (a) of this section, to be eligible for a practical test for an airline transport pilot certificate with an airplane category multiengine class rating or airline transport pilot certificate obtained concurrently with a multiengine airplane type rating, an applicant must:

* * * * *

Amend §61.153 by revising paragraph (e) to read as follows:

§61.153 Eligibility requirements: General.

* * * * *

(e) For an airline transport pilot certificate with an airplane category multiengine class rating or an airline transport pilot certificate obtained concurrently with a multiengine airplane type rating, receive a graduation certificate from an authorized training provider certifying completion of the airline transport pilot certification training program specified in §61.156 before applying for the knowledge test required by paragraph (g) of this section;

* * * * *

Amend §61.155 by revising paragraph (c)(14) and removing paragraph (d). The revision reads as follows:

§61.155 Aeronautical knowledge.

* * * * *

(c) * * *

(14) For an airline transport pilot certificate with an airplane category multiengine class rating or an airline transport pilot certificate obtained concurrently with a multiengine airplane type rating, the content of the airline transport pilot certification training program in §61.156.

* * * * *

Amend §61.156 by revising the section heading and introductory text to read as follows:

§61.156 Training requirements: Airplane category—multiengine class or multiengine airplane type rating concurrently with an airline transport pilot certificate.

A person who applies for the knowledge test for an airline transport pilot certificate with an airplane category multiengine class rating must present a graduation certificate from an authorized training provider under part 121, 135, 141, or 142 of this chapter certifying the applicant has completed the following training in a course approved by the Administrator.

* * * * *

➧ ***Change Date:*** *September 21, 2022*
➧ ***Effective Date:*** *October 21, 2022*
➧ ***Source:*** *Amdt. 61–150, 87 FR 57590*

Amend §61.159 by revising paragraph (a)(5) to read as follows:

§61.159 Aeronautical experience: Airplane category rating.

(a) * * *

(5) 250 hours of flight time in an airplane as a pilot in command, or as second in command performing the duties of pilot in command while under the supervision of a pilot in command, or any combination thereof, subject to the following:

(i) The flight time requirement must include at least—

(A) 100 hours of cross-country flight time; and

(B) 25 hours of night flight time.

(ii) Except for a person who has been removed from flying status for lack of proficiency or because of a disciplinary action involving aircraft operations, a U.S. military pilot or former U.S. military pilot who meets the requirements of §61.73(b)(1), or a military pilot in the Armed Forces of a foreign contracting State to the Convention on International Civil Aviation who meets the requirements of §61.73(c)(1), may credit flight time in a powered-lift aircraft operated in horizontal flight toward the flight time requirement.

* * * * *

➧ ***Change Date:*** *November 9, 2021*
➧ ***Effective Date:*** *December 9, 2021*
➧ ***Source:*** *Amdt. 61–149, 86 FR 62087*

Amend §61.160 by revising paragraphs (a) introductory text, (b) introductory text, (c) introductory text, and paragraphs (d), (e), and (f) to read as follows:

§61.160 Aeronautical experience—airplane category restricted privileges.

(a) Except for a person who has been removed from flying status for lack of proficiency or because of a disciplinary action involving aircraft operations, a U.S. military pilot or former U.S. military pilot may apply for an airline transport pilot certificate with an airplane category multiengine class rating or an airline transport pilot certificate concurrently with a multiengine airplane type rating with a minimum of 750 hours of total time as a pilot if the pilot presents:

* * * * *

(b) A person may apply for an airline transport pilot certificate with an airplane category multiengine class rating or an airline transport pilot certificate concurrently with a multiengine airplane type rating with a minimum of 1,000 hours of total time as a pilot if the person:

* * * * *

(c) A person may apply for an airline transport pilot certificate with an airplane category multiengine class rating or an airline transport pilot certificate concurrently with a multiengine airplane type rating with a minimum of 1,250 hours of total time as a pilot if the person:

* * * * *

(d) A graduate of an institution of higher education who completes fewer than 60 semester credit hours but at least 30 credit hours and otherwise satisfies the requirements of paragraph (b) of this section may apply for an airline transport pilot certificate with an airplane category multiengine class rating or an airline transport pilot certificate concurrently with a multiengine airplane type rating with a minimum of 1,250 hours of total time as a pilot.

(e) A person who applies for an airline transport pilot certificate under the total flight times listed in paragraphs (a), (b), (c), and (d) of this section must otherwise meet the aeronautical experience requirements of §61.159, except that the person may apply for an airline transport pilot certificate with 200 hours of cross-country flight time.

(f) A person may apply for an airline transport pilot certificate with an airplane category multiengine class rating or an airline transport pilot certificate concurrently with a multiengine airplane type rating if the person has 1,500 hours total time as a pilot, 200 hours of cross-country flight time, and otherwise meets the aeronautical experience requirements of §61.159.

* * * * *

Amend §61.165 by revising paragraphs (c)(2), (f) introductory text, and (f)(2) to read as follows:

§61.165 Additional aircraft category and class ratings.

* * * * *

(c) * * *

(2) Successfully complete the airline transport pilot certification training program specified in §61.156;

* * * * *

(f) ***Adding a multiengine class rating to an airline transport pilot certificate with a single engine class rating.*** A person applying to add a multiengine class rating, or a multiengine class rating concurrently with a multiengine airplane type rating, to an airline transport pilot certificate with an airplane category single engine class rating must—

* * * * *

(2) Pass a required knowledge test on the aeronautical knowledge areas of §61.155(c), as applicable to multiengine airplanes;

* * * * *

PART 71
DESIGNATION OF CLASS A, B, C, D, AND E AIRSPACE AREAS; AIR TRAFFIC SERVICE ROUTES; AND REPORTING POINTS

➧ ***Change Date:*** *August 23, 2021*
➧ ***Effective Date:*** *September 15, 2021*
➧ ***Source:*** *Amdt. 71–53, 86 FR 46962*

In §71.1, revise to read as follows:

§71.1 Applicability.

A listing for Class A, B, C, D, and E airspace areas; air traffic service routes; and reporting points can be found in FAA Order JO 7400.11F, Airspace Designations and Reporting Points, dated August 10, 2021. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552 (a) and 1 CFR part 51. The approval to incorporate by reference FAA Order JO 7400.11F is effective September 15, 2021, through September 15, 2022. During the incorporation by reference period, proposed changes to the listings of Class A, B, C, D, and E airspace areas; air traffic service routes; and reporting points will be published in full text as proposed rule documents in the **Federal Register**. Amendments to the listings of Class A, B, C, D, and E airspace areas; air traffic service routes; and reporting points will be published in full text as final rules in the **Federal Register**. Periodically, the final rule amendments will be integrated into a revised edition of the Order and submitted to the Director of the Federal Register for approval for incorporation by reference in this section. Copies of the Order may be obtained from Rules and Regulations Group, Federal Aviation Administration, 800 Independence Avenue SW, Washington, DC 20591, (202) 267-8783. An electronic version of the Order is available on the FAA website at:

http://www.faa.gov/air_traffic/publications

Copies of FAA Order JO 7400.11F may be inspected in Docket No. FAA-2021-0648; Amendment No. 71-53, on:

http://www.regulations.gov

A copy of FAA Order JO 7400.11F may be inspected at the National Archives and Records Administration (NARA). For information on the availability of FAA Order JO 7400.11F at NARA, email: fr.inspection@nara.gov or go to:

https://www.archives.gov/federal-register/cfr/ibr-locations.html

§§71.5; 71.15; 71.31; 71.33(c); 71.41; 71.51; 71.61; 71.71(b), (c), (d), (e), and (f); and 71.901(a) are amended by removing the words "FAA Order 7400.11E" and adding, in their place, the words "FAA Order JO 7400.11F."

PART 91
GENERAL OPERATING AND FLIGHT RULES

➧ ***Change Date:*** *September 20, 2022*
➧ ***Effective Date:*** *September 20, 2022*
➧ ***Source:*** *Amdt. 91–353B, 87 FR 57390*

Amend §91.1605 by revising paragraph (e) to read as follows:

§91.1605 Special Federal Aviation Regulation No. 77—Prohibition Against Certain Flights in the Baghdad Flight Information Region (FIR) (ORBB).

* * * * *

(e) ***Expiration.*** This SFAR will remain in effect until October 26, 2024. The FAA may amend, rescind, or extend this SFAR, as necessary.

➧ ***Change Date:*** *October 6, 2021*
➧ ***Effective Date:*** *October 6, 2021*
➧ ***Source:*** *Amdt. 91–331G, 86 FR 55491*

Revise §91.1607 to read as follows:

§91.1607 Special Federal Aviation Regulation No. 113—Prohibition Against Certain Flights in Specified Areas of the Dnipro Flight Information Region (FIR) (UKDV).

(a) ***Applicability.*** This Special Federal Aviation Regulation (SFAR) applies to the following persons:

(1) All U.S. air carriers and U.S. commercial operators;

(2) All persons exercising the privileges of an airman certificate issued by the FAA, except when such persons are operating U.S.-registered aircraft for a foreign air carrier; and

(3) All operators of U.S.-registered civil aircraft, except when the operator of such aircraft is a foreign air carrier.

(b) ***Flight prohibition.*** Except as provided in paragraphs (c) and (d) of this section, no person described in paragraph (a) of this section may conduct flight operations in the Dnipro FIR (UKDV) from the surface to unlimited, east of a line drawn direct from ABDAR (471802N 351732E) along airway M853 to NIKAD (485946N

355519E), then along airway N604 to GOBUN (501806N 373824E). This prohibition applies to airways M853 and N604. This prohibition extends from the surface to unlimited and includes that portion of the Kyiv Upper Information Region (UIR) (UKBU) airspace within the lateral limits set forth in this paragraph (b) from the upper boundaries of the Dnipro FIR to unlimited.

(c) ***Permitted operations.*** This section does not prohibit persons described in paragraph (a) of this section from conducting flight operations in the specified areas described in paragraph (b) of this section, under the following circumstances:

(1) Operations are permitted to the extent necessary to take off from and land at the following three airports, subject to the approval of, and in accordance with the conditions established by, the appropriate authorities of Ukraine:

(i) Kharkiv International Airport (UKHH);

(ii) Dnipro International Airport (UKDD); and

(iii) Zaporizhzhia International Airport (UKDE).

(2) Operations are permitted provided that they are conducted under a contract, grant, or cooperative agreement with a department, agency, or instrumentality of the U.S. Government (or under a subcontract between the prime contractor of the department, agency, or instrumentality of the U.S. Government and the person described in paragraph (a) of this section) with the approval of the FAA, or under an exemption issued by the FAA. The FAA will consider requests for approval or exemption in a timely manner, with the order of preference being: First, for those operations in support of U.S. Government-sponsored activities; second, for those operations in support of government-sponsored activities of a foreign country with the support of a U.S. Government department, agency, or instrumentality; and third, for all other operations.

(d) ***Emergency situations.*** In an emergency that requires immediate decision and action for the safety of the flight, the pilot in command of an aircraft may deviate from this section to the extent required by that emergency. Except for U.S. air carriers and commercial operators that are subject to the requirements of 14 CFR part 119, 121, 125, or 135, each person who deviates from this section must, within 10 days of the deviation, excluding Saturdays, Sundays, and Federal holidays, submit to the responsible Flight Standards office a complete report of the operations of the aircraft involved in the deviation, including a description of the deviation and the reasons for it.

(e) ***Expiration.*** This SFAR will remain in effect until October 27, 2023. The FAA may amend, rescind, or extend this SFAR as necessary.

➨ ***Change Date:*** *December 7, 2021*
➨ ***Effective Date:*** *December 7, 2021*
➨ ***Source:*** *Amdt. 91–340C, 86 FR 69173*

Amend §91.1611 by revising paragraph (e) to read as follows:

91.1611 Special Federal Aviation Regulation No. 115—Prohibition Against Certain Flights in Specified Areas of the Sanaa Flight Information Region (FIR) (OYSC).

* * * * *

(e) ***Expiration.*** This SFAR will remain in effect until January 7, 2025. The FAA may amend, rescind, or extend this SFAR, as necessary.

➨ ***Change Date:*** *September 20, 2022*
➨ ***Effective Date:*** *September 20, 2022*
➨ ***Source:*** *Amdt. 91–359A, 87 FR 57384*

Amend §91.1617 by revising paragraph (e) to read as follows:

§91.1617 Special Federal Aviation Regulation No. 117—Prohibition Against Certain Flights in the Tehran Flight Information Region (FIR) (OIIX).

* * * * *

(e) ***Expiration.*** This SFAR will remain in effect until October 31, 2024. The FAA may amend, rescind, or extend this SFAR, as necessary.

PART 107
SMALL UNMANNED AIRCRAFT SYSTEMS

➨ ***Change Date:*** *November 10, 2021*
➨ ***Effective Date:*** *November 10, 2021*
➨ ***Source:*** *Amdt. 107–9, 86 FR 62473*

Amend §107.110 by redesignating paragraphs (b) and (c) as paragraphs (a)(2) and (b), respectively.

Amend §107.125 by revising paragraph (a)(2) to read as follows:

§107.125 Category 3 operations: Operating requirements.

* * * * *

(a) * * *

(2) Is listed on an FAA-accepted declaration of compliance as eligible for Category 3 operations in accordance with §107.160; and

* * * * *

Aeronautical Information Manual
Explanation of Major Changes

Change 1 effective December 2, 2021 and Change 2 effective May 19, 2022 (to Basic Manual effective June 17, 2021)

1–1–8. NAVAID Service Volumes

1–1–17. Global Positioning System (GPS)

1–1–18. Wide Area Augmentation System (WAAS)

1–2–3. Use of Suitable Area Navigation (RNAV) Systems on Conventional Procedures and Routes

2–1–2. Visual Glideslope Indicators

3–5–8. Weather Reconnaissance Area (WRA)

4–1–3. Flight Service Stations

4–1–14. Automatic Flight Information Service (AFIS)—Alaska FSS Only

4–5–9. Flight Information Service–Broadcast (FIS-B)

5–1–1. Preflight Preparation

5–1–3. Notice to Airmen (NOTAM) System

5–5–1. General

7–1–5. Preflight Briefing

7–1–9. Flight Information Services (FIS)

7–6–3. Obstructions to Flight

7–6–12. Light Amplification by Stimulated Emission of Radiation (Laser) Operations and Reporting Illumination of Aircraft

10–2–1. Offshore Helicopter Operations

This editorial change complies with the Federal Women's Program (FWP) suggestions. The acronym NOTAM is updated from Notice to Airmen to the more applicable term Notice to Air Missions, which is inclusive of all aviators and missions.

1–1–9. Instrument Landing System (ILS)

Discussion within the PARC Pilot-Controller Procedures and Systems Integration (PCPSI) work group resulted in a recommendation to further clarify the ILS Expanded Service Volume (ESV) and include a new figure that better explains how pilots can identify an ILS ESV when consulting a charted instrument procedure.

1–1–13. User Reports Requested On NAVAID Outages

The current publication of the AIM contains a duplication of content in paragraph 1-1-13. This change deletes the duplicated section found in paragraph 1-1-13, subparagraph a.

1–1–17. Global Positioning System

The NOTAM subparagraph (g) was deleted so as not to duplicate. There is a specific NOTAM paragraph (5-1-3) that explains NOTAMs in detail. A few paragraphs were moved to supplement the RAIM paragraph. Lastly, in an effort to clarify guidance and to ensure it supports what is currently being charted in regards to the missed approach waypoint (MAWP) and the missed approach holding waypoint (MAHWP), a clearer depiction and a minor correction on how Fly-by (FB) and Fly-over (FO) waypoints are used and depicted on approach charts.

1–1–19. Ground Based Augmentation System (GBAS) Landing System (GLS)

This change is a complete rewrite of paragraph 1-1-19 to eliminate much of the technical descriptions and to focus on the operational functions and descriptions of the GLS system. Emphasis was concentrated on GLS similarity to ILS, operational description and additional attention to familiarity with standard service volumes of GLS procedures.

2–2–4. LED Lighting Systems

This change adds a new paragraph providing information and clarity in order to emphasize the importance of incorporating procedures—for the avoidance of obstacles marked with light-emitting diode (LED) obstruction lights during night vision goggles (NVG) operations—into manuals and/or standard operating procedures (SOP).

4–4–9. VFR/IFR Flights

5–1–16. RNAV and RNP Operations

5–4–5. Minimum Vectoring Altitude (MVA)

This change rewrites the notes in off route obstruction clearance altitude (OROCA) related paragraphs, to incorporate updated terminology and enable a better understanding of how OROCA is utilized.

4–6–4. Flight Planning Into RVSM Airspace

5–1–1. Preflight Preparation

5–1–4. Flight Plan—VFR Flights

5–1–6. Flight Plan—Defense VFR (DVFR) Flights

5–1–7. Composite Flight Plan (VFR/IFR Flights)

5–1–8. Flight Plan (FAA Form 7233-1)—Domestic IFR Flights

5–1–9. International Flight Plan (FAA Form 7233-4)—IFR Flights (For Domestic or International Flights)

Appendix 4. FAA Form 7233-4—International Flight Plan

Appendix 5. FAA Form 7233-1—Flight Plan

The following changes are required to align the order with current operational procedures. These changes also support the standardized use of FAA Form 7233-4, International Flight Plan, and inform stakeholders that legacy procedures may be used by parties that do not have the necessary equipment to adhere to the new ICAO forms and or procedures.

5–1–3. Notice to Airmen (NOTAM) System

GPS NOTAM and receiver autonomous integrity monitoring (RAIM) information is currently located in the overview section of the AIM/AIP. This change consolidates all of the NOTAM information into one procedures section and updates current NOTAM language. This update references how to report GPS anomalies, as well as edits two tables with example NOTAMs on GPS testing and pseudo-random satellite numbers.

5–1–17. Cold Temperature Operations

This change replaces paragraph 5-1-17 Cold Temperature Operations guidance and preflight planning information being updated to reflect the two temperature limitations that may be found on an FAA produced instrument approach procedure (IAP). The new paragraph also directs operators to Chapter 7 to review the information on cold temperature altimetry errors and current procedures for CTA and baro-VNAV temperature limitations.

5–2–7. Departure Restrictions, Clearance Void Times, Hold for Release, and Release Times

A recent change to FAA Order JO 7110.65 requires that ATC give a pilot departing from an airport without an operating control tower a departure release, a hold for release, or a release time when issuing the departure clearance. This AIM change reflects the change made to FAA Order JO 7110.65 and clarifies pilot and controller responsibilities.

5–2–8. Departure Control

5–2–9. Instrument Departure Procedures (DP)—Obstacle Departure Procedures (ODP), Standard Instrument Departures (SID), and Diverse Vector Areas (DVA)

5–5–6. Radar Vectors

5–5–14. Instrument Departures

This change adds a statement that diverse vector areas (DVAs) cannot be used concurrently with a standard instrument departure (SID) when the SID is included as part of the instrument flight rules (IFR) clearance, and addresses a new requirement imposed on ATC that pilots will receive an amended clearance if departure procedures are changed from SIDs to DVAs and vice versa.

5–2–9. Instrument Departure Procedures (DP)—Obstacle Departure Procedures (ODP), Standard Instrument Departures (SID), and Diverse Vector Areas (DVA)

Instructions and clarity were added for pilots to remain within the visual climb over airport (VCOA) specified visibility when departing an airport instrument flight rules (IFR) using VCOA.

5–4–5. Instrument Approach Procedure (IAP) Charts

5–5–4. Instrument Approach

5–5–5. Missed Approach

This change renames paragraph 5-4-5m7(f) from Hot and Cold Temperature Limitations to Published Temperature Limitations, and also adds information on the two published temperature limitations. Paragraph 5-5-4 will give a brief description of the two temperature limitations found on the Instrument Approach Procedures (IAPs). Paragraph 5-5-5 will mention the Cold Temperature Airports (CTA) ICON and discuss briefly when to correct and who to contact.

5–4–5. Instrument Approach Procedure (IAP) Charts

FAA Order 8260.46 is updated to reflect adding minimum safe altitudes (MSAs) to graphic departures. This AIM change reflects the new terminal instrument procedures (TERPS) guidance.

5–4–18. RNP AR (Authorization Required) Instrument Approach Procedures

This change deletes most of this paragraph. All that is necessary in this publication is a brief overview of Required Navigation Performance Authorization Required (RNP AR) and reference to a complete AC dedicated to RNP AR.

5–4–20. Approach and Landing Minimums

Removes outdated and incorrect verbiage and re-aligns AIM/AIP verbiage with FAA Order 8260.58.

5–6–8. Foreign State Aircraft Operations

Guidance for Foreign State Aircraft operating with a Department of State issued Diplomatic Clearance is being added to the Aeronautical Information Manual regarding authorizations to deviate from Automatic Dependent Surveillance–Broadcast (ADS-B) requirements.

7–1–2. FAA Weather Services

This change adds a new table for SPECI issuance including snow-related intensity changes so flight crews can accurately assess holdover time limita-tions. Table 7-1-1 in Chapter 7, Section 1, was inserted and other tables in the chapter renumbered along with a new sentence to reference the table.

7–1–8. Inflight Weather Advisory Broadcasts

This change removes Severe Weather Forecast Alerts (AWW) from paragraph 7-1-8, Inflight Weather Advisory Broadcasts, which are not broadcast by Terminal or ARTCC controllers. The change also harmonizes paragraph 7-1-8a Note with FAA Order JO 7110.65, subparagraph 2-6-6b, and adds a Reference to that paragraph.

7–1–12. ATC Inflight Weather Avoidance Assistance

This change adds the word “lateral” to this paragraph to align with FAA Order JO 7110.65 and the Aeronautical Information Publication (AIP).

7–1–24. Microbursts

These changes update the information in this chapter regarding Low Level Wind Shear Alert System (LLWAS), Terminal Doppler Weather Radar (TDWR), and Weather System Processor (WSP).

7–6–2. Reporting Radio/Radar Altimeter Anomalies

This change adds a new paragraph to address the issue of radio frequency interference (RFI) in the C-band that could cause erroneous radio altimeter values and impact dependent system functions due to the deployment of 5G antennas.

7–6–16. Space Launch and Reentry Area

This change relocates the space launch activity area information that was previously in Chart Supplement publications into the AIM and AIP. The term “space launch activity area" was also updated to the more inclusive “space launch and reentry area."

9–1–4. General Description of Each Chart Series

This change updates frequency of chart production. In cases where annually or biannual updates were made, 56 day chart updates replace those longer update periods, and reduce the NOTAM burden and bring NAS changes to aviators in a timely manner.

10–1–2. Helicopter Instrument Approaches

10–1–3. Helicopter Approach Procedures to VFR Heliports

Changes were made throughout the section to improve the clarity and provide updated information wherever necessary. Emphasis was concentrated on clarification of language and operational description associated with helicopter instrument approach procedures.

10–1–5. Departure Procedures

This addition was made to improve the clarity and provide departure information wherever necessary. Emphasis was concentrated on clarification of language and operational description associated with helicopter instrument departure procedures.

Editorial Changes

Editorial changes include updates to an out of date reference in paragraph 3-4-1, a formatting fix in paragraph 7-1-13, a math error correction in paragraph 7-3-6, correcting Las Vegas McCarran International to Harry Reid International in paragraph 4-5-5 (Table 4-5-1), removing an incorrect reference in paragraph 7-4-1, adding a missing “traffic advisories”, the replacement of filing code M2 for M3 in paragraph 5-1-6 and various tables in Appendix 4, correcting the spelling of Harrisburg International Airport in the title of Figure 5-4-12, and updating a hyperlink in subparagraph 4-7-1e.

Entire Publication

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

Chapter 1

1–1–8 NAVAID Service Volumes

* * * * *

b. A NAVAID will have service volume restrictions if it does not conform to signal strength and course quality standards throughout the published SSV. Service volume restrictions are first published in Notices to Air Missions (NOTAMs) and then with the alphabetical listing of the NAVAIDs in the Chart Supplement. Service volume restrictions do not generally apply to published instrument procedures or routes unless published in NOTAMs for the affected instrument procedure or route.

* * * * *

d. * * *

TABLE 1–1–2
NDB SERVICE VOLUMES

Class	Distance (Radius) (NM)
Compass Locator	15
MH	25
H	50*
HH	75
**Service ranges of individual facilities may be less than 50 nautical miles (NM). Restrictions to service volumes are first published as a Notice to Air Missions and then with the alphabetical listing of the NAVAID in the Chart Supplement U.S.*	

1–1–9 Instrument Landing System (ILS)

* * * * *

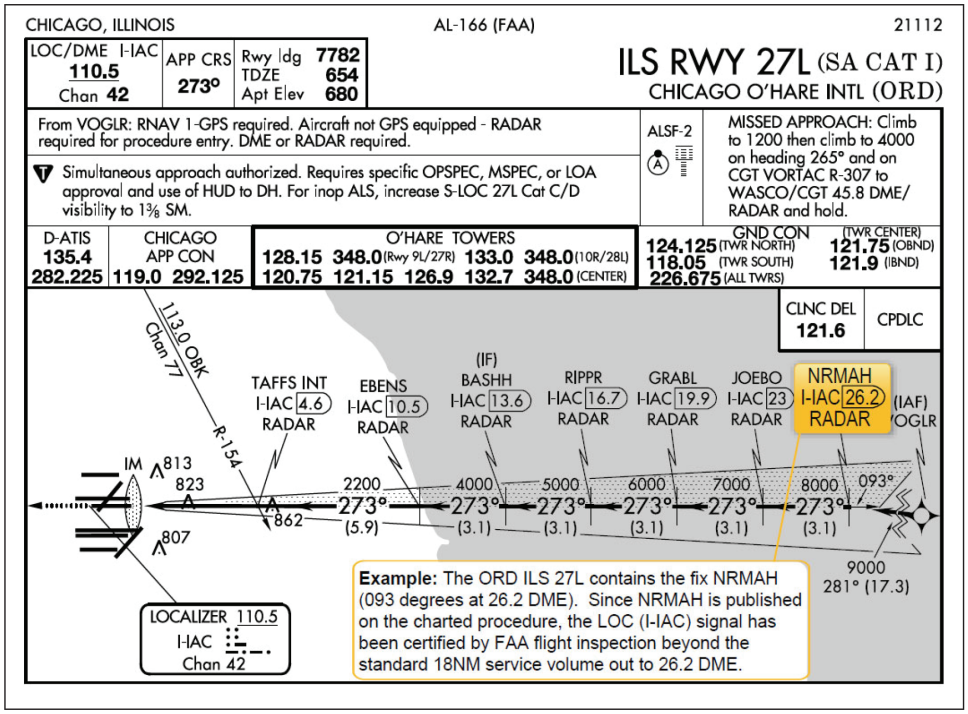
b. * * *

6. Unreliable signals may be received outside of these areas. ATC may clear aircraft on procedures beyond the service volume when the controller initiates the action or when the pilot requests, and radar monitoring is provided.

7. The areas described in paragraph 1-1-9 b.5 and depicted in Figure 1-1-6 represent a Standard Service Volume (SSV) localizer. All charted procedures with localizer coverage beyond the 18 NM SSV have been through the approval process for Expanded Service Volume (ESV), and have been validated by flight inspection. (See Figure 1-1-7.)

* * * * *

FIGURE 1–1–7
ILS Expanded Service Volume



* * * * *

1–1–13 User Reports Requested on NAVAID Outages

a. Users of the National Airspace System (NAS) can render valuable assistance in the early correction of NAVAID malfunctions or GNSS problems and are encouraged to report their observations of undesirable avionics performance. Although NAVAIDs are monitored by electronic detectors, adverse effects of electronic interference, new obstructions or changes in terrain near the NAVAID can exist without detection by the ground monitors. Some of the characteristics of malfunction or deteriorating performance which should be reported are: erratic course or bearing indications; intermittent, or full, flag alarm; garbled, missing or obviously improper coded identification; poor quality communications reception; or, in the case of frequency interference, an audible hum or tone accompanying radio communications or NAVAID identification. GNSS problems are often characterized by navigation degradation or service loss indications. For instance, pilots conducting operations in areas where there is GNSS interference may be unable to use GPS for navigation, and ADS-B may be unavail-

able for surveillance. Radio frequency interference may affect both navigation for the pilot and surveillance by the air traffic controller. Depending on the equipment and integration, either an advisory light or message may alert the pilot. Air traffic controllers monitoring ADS-B reports may stop receiving ADS-B position messages and associated aircraft tracks.

b. * * *

1–1–17 Global Positioning System (GPS)

a. * * *

2. * * *

(a) The status of GPS satellites is broadcast as part of the data message transmitted by the GPS satellites. GPS status information is also available by means of the U.S. Coast Guard navigation information service: (703) 313-5907, Internet: **http://www.navcen.uscg.gov/**. Additionally, satellite status is available through the Notice to Air Missions (NOTAM) system.

b. * * *

1. * * *

(e) * * *

(6) Pilots should be vigilant to see and avoid other traffic when near VFR waypoints. With the increased use of GPS navigation and accuracy, expect increased traffic near VFR waypoints. Regardless of the class of airspace, monitor the available ATC frequency for traffic information on other aircraft operating in the vicinity. See paragraph 7-6-3, VFR in Congested Areas, for more information.

* * * * *

2. * * *

(a) * * *

(5) Aircraft navigating by IFR-approved GPS are considered to be performance-based navigation (PBN) aircraft and have special equipment suffixes. File the appropriate equipment suffix in accordance with Appendix 4, Table 4-2, on the ATC flight plan. If GPS avionics become inoperative, the pilot should advise ATC and amend the equipment suffix.

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5. * * *

(g) Receiver Autonomous Integrity Monitoring (RAIM)

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(2) Civilian pilots may obtain GPS RAIM availability information for nonprecision approach procedures by using a manufacturer-supplied RAIM prediction tool, or using the Service Availability Prediction Tool (SAPT) on the FAA en route and terminal RAIM prediction website. Pilots can also request GPS RAIM aeronautical information from a flight service station during preflight briefings. GPS RAIM aeronautical information can be obtained for a period of 3 hours (for example, if you are scheduled to arrive at 1215 hours, then the GPS RAIM information is available from 1100 to 1400 hours) or a 24-hour timeframe at a particular airport. FAA briefers will provide RAIM information for a period of 1 hour before to 1 hour after the ETA hour, unless a specific timeframe is requested by the pilot. If flying a published GPS departure, a RAIM prediction should also be requested for the departure airport.

(3) The military provides airfield specific GPS RAIM NOTAMs for nonprecision approach procedures at military airfields. The RAIM outages are issued as M-series NOTAMs and may be obtained for up to 24 hours from the time of request.

(4) Receiver manufacturers and/or database suppliers may supply "NOTAM" type information concerning database errors. Pilots should check these sources when available, to ensure that they have the most current information concerning their electronic database.

(5) If RAIM is not available, use another type of navigation and approach system; select another route or destination; or delay the trip until RAIM is predicted to be available on arrival. On longer flights, pilots should consider rechecking the RAIM prediction for the destination during the flight. This may provide an early indication that an unscheduled satellite outage has occurred since takeoff.

(6) If a RAIM failure/status annunciation occurs prior to the final approach waypoint (FAWP), the approach should not be completed since GPS no longer provides the required integrity. The receiver performs a RAIM prediction by 2 NM prior to the FAWP to ensure that RAIM is available as a condition for entering the approach mode. The pilot should ensure the receiver has sequenced from "Armed" to "Approach" prior to the FAWP (normally occurs 2 NM prior). Failure to sequence may be an indication of the detection of a satellite anomaly, failure to arm the receiver (if required), or other problems which preclude flying the approach.

(7) If the receiver does not sequence into the approach mode or a RAIM failure/status annunciation occurs prior to the FAWP, the pilot must not initiate the approach nor descend, but instead, proceed to the missed approach waypoint (MAWP) via the FAWP, perform a missed approach, and contact ATC as soon as practical. The GPS receiver may continue to operate after a RAIM flag/status annunciation appears, but the navigation information should be considered advisory only. Refer to the receiver operating manual for specific indications and instructions associated with loss of RAIM prior to the FAF.

(8) If the RAIM flag/status annunciation appears after the FAWP, the pilot should initiate a climb and execute the missed approach. The GPS receiver may continue to operate after a RAIM flag/status annunciation appears, but the navigation information should be considered advisory only. Refer to the receiver operating manual for operating mode information during a RAIM annunciation.

(h) Waypoints

* * * * *

(3) GPS approaches use fly-over and fly-by waypoints to join route segments on an approach. Fly-by waypoints connect the two segments by allowing the aircraft to turn prior to the current waypoint in order to roll out on course to the next waypoint. This is known as turn anticipation and is compensated for in the airspace and terrain clearances. The missed approach waypoint (MAWP) will always be a fly-over waypoint. A holding waypoint will always be designed as a fly-over waypoint in the navigational database but may be charted as a fly-by event unless the holding waypoint is used for another purpose in the procedure and both events require the waypoint to be a fly-over event. Some waypoints may have dual use; for example, as a fly-by waypoint when used as an IF for a NoPT route and as a fly-over waypoint when the same waypoint is also used as an IAF/IF hold-in-lieu of PT. Since the waypoint can only be charted one way, when this situation occurs, the fly-by waypoint symbol will be charted in all uses of the waypoint.

* * * * *

(i) Position Orientation

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(j) Impact of Magnetic Variation on PBN Systems

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(k) GPS Familiarization

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1–1–18 Wide Area Augmentation System (WAAS)

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c. * * *

5. Prior to GPS/WAAS IFR operation, the pilot must review appropriate Notices to Air Missions (NOTAMs) and aeronautical information. This information is available on request from a Flight Service Station. The FAA will provide NOTAMs to advise pilots of the status of the WAAS and level of service available.

* * * * *

1–1–19 Ground Based Augmentation System (GBAS) Landing System (GLS)

a. A GBAS ground installation at an airport can provide localized, differential augmentation to the Global Positioning System (GPS) signal-in-space enabling an aircraft's GLS precision approach capability. Through the GBAS service and the aircraft's GLS installation a pilot may complete an instrument approach offering three-dimensional angular, lateral, and vertical guidance for exact alignment and descent to a runway. The operational benefits of a GLS approach are similar to the benefits of an ILS or LPV approach operation.

Note: *To remain consistent with international terminology, the FAA will use the term GBAS in place of the former term Local Area Augmentation System (LAAS).*

b. An aircraft's GLS approach capability relies on the broadcast from a GBAS Ground Facility (GGF) installation. The GGF installation includes at least four ground reference stations near the airport's runway(s), a corrections processor, and a VHF Data Broadcast (VDB) uplink antenna. To use the GBAS GGF output and be eligible to conduct a GLS approach, the aircraft requires eligibility to conduct RNP approach (RNP APCH) operations and must meet the additional, specific airworthiness requirements for installation of a GBAS receiver intended to support GLS approach operations. When the aircraft achieves GLS approach eligibility, the aircraft's onboard navigation database may then contain published GLS instrument approach procedures.

c. During a GLS instrument approach procedure, the installation of an aircraft's GLS capability provides the pilot three-dimensional (3D) lateral and vertical navigation guidance much like an ILS instrument approach. GBAS corrections augment the GPS signal-in-space by offering position corrections, ensures the availability of enhanced integrity parameters, and then transmits the actual approach path definition over the VDB uplink antenna. A single GBAS ground station can support multiple GLS approaches to one or more runways.

d. Through the GBAS ground station, a GLS approach offers a unique operational service volume distinct from the traditional ILS approach service volume (see Figure 1-1-9). However, despite the unique service volume, in the final approach segment, a GLS approach provides precise 3D angular lateral and vertical guidance mimicking the precision guidance of an ILS approach.

e. Transitions to and segments of the published GLS instrument approach procedures may rely on use of RNAV 1 or RNP 1 prior to an IAF. Then, during the approach procedure, prior to the aircraft entering the GLS approach mode, a GLS approach procedure design uses the RNP APCH procedure design criteria to construct the procedural path (the criteria used to publish procedures titled "RNAV (GPS)" in the US). Thus, a GLS approach procedure may include paths requiring turns after the aircraft crosses the IAF, prior to the aircraft's flight guidance entering the GLS approach flight guidance mode. Likewise, the missed approach procedure for a GLS approach procedure relies exclusively on the same missed approach criteria supporting an RNP APCH.

f. When maneuvering the aircraft in compliance with an ATC clearance to intercept a GLS approach prior to the final approach segment (e.g. "being vectored"), the pilot should adhere to the clearance and ensure the aircraft intercepts the extended GLS final approach course within the specified service volume. Once on the GLS final approach course, the pilot should ensure the aircraft is in the GLS approach mode prior to reaching the procedure's glidepath intercept point. Once the aircraft is in the GLS flight guidance mode and captures the GLS glidepath, the pilot should fly the GLS final approach segment using the same pilot techniques they use to fly an ILS final approach or the final approach of an RNAV (GPS) approach flown to LPV minimums. See also the Instrument Procedures Handbook for more information on how to conduct a GLS instrument approach procedure.

* * * * *

1–2–2 Required Navigation Performance (RNP)

* * * * *

b. * * *

1. * * *

(a) * * *

(1) RNP Approach (RNP APCH). In the U.S., RNP APCH procedures are titled RNAV (GPS) and offer several lines of minima to accommodate varying levels of aircraft equipage: either lateral navigation (LNAV), LNAV/vertical navigation (LNAV/VNAV), Localizer Performance with Vertical Guidance (LPV), and Localizer Performance (LP). GPS with or without Space-Based Augmentation System (SBAS) (for example, WAAS) can provide the lateral information to support LNAV minima. LNAV/VNAV incorporates LNAV lateral with vertical path guidance for systems and operators capable of either barometric or SBAS vertical. Pilots are required to use SBAS to fly to the LPV or LP minima. RF turn capability is optional in RNP APCH eligibility. This means that your aircraft may be eligible for RNP APCH operations, but you may not fly an RF turn unless RF turns are also specifically listed as a feature of your avionics suite. GBAS Landing System (GLS) procedures are also constructed using RNP APCH NavSpecs and provide precision approach capability. RNP APCH has a lateral accuracy value of 1 in the terminal and missed approach segments and essentially scales to RNP 0.3 (or 40 meters with SBAS) in the final approach. (See paragraph 5-4-18, RNP AR (Authorization Required) Instrument Procedures.)

* * * * *

1–2–3 Use of Suitable Area Navigation (RNAV) Systems on Conventional Procedures and Routes

* * * * *

b. * * *

2. * * *

Note: *Approved RNAV systems using DME/DME/IRU, without GPS/WAAS position input, may only be used as a substitute means of navigation when specifically authorized by a Notice to Air Missions (NOTAM) or other FAA guidance for a specific procedure. The NOTAM or other FAA guidance authorizing the use of DME/DME/IRU systems will also identify any required DME facilities based on an FAA assessment of the DME navigation infrastructure.*

* * * * *

Chapter 2

2–1–2 Visual Glideslope Indicators

a. * * *

4. The VASI is a system of lights so arranged to provide visual descent guidance information during the approach to a runway. These lights are visible from 3–5 miles during the day and up to 20 miles or more at night. The visual glide path of the VASI provides safe obstruction clearance within plus or minus 10 degrees of the extended runway centerline and to 4 NM from the runway threshold. Descent, using the VASI, should not be initiated until the aircraft is visually aligned with the runway. Lateral course guidance is provided by the runway or runway lights. In certain circumstances, the safe obstruction clearance area may be reduced by narrowing the beam width or shortening the usable distance due to local limitations, or the VASI may be offset from the extended runway centerline. This will be noted in the Chart Supplement U.S. and/or applicable Notices to Air Missions (NOTAM).

* * * * *

2–2–4. LED Lighting Systems

Certain light-emitting diode (LED) lighting systems fall outside the combined visible and near-infrared spectrum of night vision goggles (NVGs) and thus will not be visible to a flightcrew using NVGs.

The FAA changed specifications for LED-based red obstruction lights to make them visible to pilots using certain NVG systems, however, other colors may not be visible.

It is recommended that air carriers/operators—including Part 91 operators—who use NVGs incorporate procedures into manuals and/or standard operating procedures (SOPs) requiring periodic, unaided scanning when operating at low altitudes and when performing a reconnaissance of landing areas.

Chapter 3

3–4–1 General

* * * * *

d. Special use airspace descriptions (except CFAs) are contained in FAA Order JO 7400.10, Special Use Airspace.

* * * * *

3–5–8 Weather Reconnaissance Area (WRA)

a. General. Hurricane Hunters from the United States Air Force Reserve 53rd Weather Reconnaissance Squadron (WRS) and the National Oceanic and Atmospheric Administration (NOAA) Aircraft Operations Center (AOC) operate weather reconnaissance/research aircraft missions, in support of the National Hurricane Operations Plan (NHOP), to gather meteorological data on hurricanes and tropical cyclones. 53rd WRS and NOAA AOC aircraft normally conduct these missions in airspace identified in a published WRA Notice to Air Missions (NOTAM).

* * * * *

Chapter 4

4–1–3 Flight Service Stations

Flight Service Stations (FSSs) are air traffic facilities that provide pilot briefings, flight plan processing, en route flight advisories, search and rescue services, and assistance to lost aircraft and aircraft in emergency situations. FSSs also relay ATC clearances, process Notices to Air Missions, and broadcast aviation weather and aeronautical information. In Alaska, designated FSSs also take weather observations, and provide Airport Advisory Services (AAS).

4–1–14 Automatic Flight Information Service (AFIS)—Alaska FSSs Only

a. * * *

3. * * *

Example: *"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. Contact Kotzebue Radio on 123.6 for traffic advisories and advise intentions. Notice to Air Missions, Hotham NDB out of service. Transcribed Weather Broadcast out of service. Advise on initial contact you have ALPHA."*

* * * * *

4–1–18 Terminal Radar Services for VFR Aircraft

a. * * *

4. Approach control will issue wind and runway, except when the pilot states "have numbers" or this information is contained in the ATIS broadcast and the pilot states that the current ATIS information has been received. Traffic information is provided on a workload permitting basis. Approach control will specify the time or place at which the pilot is to contact the tower on local control frequency for further landing information. Radar service is automatically terminated and the aircraft need not be advised of termination when an arriving VFR aircraft receiving radar services to a tower-controlled airport where basic radar service is provided has landed, or to all other airports, is instructed to change to tower or advisory frequency. (See FAA Order JO 7110.65, Air Traffic Control, paragraph 5-1-9, Radar Service Termination.)

* * * * *

4–1–20 Transponder and ADS-B Out Operation

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g. * * *

1. * * *

Note 3: *VFR gliders should squawk 1202 in lieu of 1200.*

* * * * *

4–1–23 Weather Systems Processor

The Weather Systems Processor (WSP) was developed for use in the National Airspace System to provide weather processor enhancements to selected Airport Surveillance Radar (ASR)-9 facilities. The WSP provides Air Traffic with warnings of hazardous wind shear and microbursts. The WSP also provides users with terminal area 6-level weather, storm cell locations and movement, as well as the location and predicted future position and intensity of wind shifts that may affect airport operations.

4–2–4 Aircraft Call Signs

* * * * *

b. * * *

4. * * *

Note: *Civilian air ambulance aircraft operating VFR and without a filed flight plan are eligible for priority handling in accordance with subparagraph b1 above.*

5. ATC will also provide priority handling to HOSP and AIR EVAC flights when verbally requested. These aircraft may file "HOSP" or "AIR EVAC" in either Item 11 (Remarks) of the flight plan or Item 18 of an international flight plan. For aircraft identification in radio transmissions, civilian pilots will use normal call signs when filing "HOSP" and military pilots will use the "EVAC" call sign.
* * * * *

4–3–7 Low Level Wind Shear/Microburst Detection Systems

Low Level Wind Shear Alert System (LLWAS), Terminal Doppler Weather Radar (TDWR), Weather Systems Processor (WSP), and Integrated Terminal Weather System (ITWS) display information on hazardous wind shear and microburst activity in the vicinity of an airport to air traffic controllers who relay this information to pilots.
* * * * *

4–3–18 Taxiing

* * * * *

b. ATC clearances or instructions pertaining to taxiing are predicated on known traffic and known physical airport conditions. Therefore, it is important that pilots clearly understand the clearance or instruction. Although an ATC clearance is issued for taxiing purposes, when operating in accordance with the CFRs, it is the responsibility of the pilot to avoid collision with other aircraft. Since "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 should obtain clarification of any clearance or instruction which is not understood.

1. Good operating practice dictates that pilots acknowledge all runway crossing, hold short, or takeoff clearances unless there is some misunderstanding, at which time the pilot should query the controller until the clearance is understood.
* * * * *

4–4–9 VFR/IFR Flights

* * * * *

Note: *OROCA is a published altitude which provides 1,000 feet of terrain and obstruction clearance in the US (2,000 feet of clearance in designated mountainous areas). 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.*

4–5–5 Airport Surface Detection Equipment (ASDE-X)/Airport Surface Surveillance Capability (ASSC)

* * * * *

c. * * *

TABLE 4–5–1

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LAS	Las Vegas Harry Reid International

* * * * *

4–5–9 Flight Information Service–Broadcast (FIS-B)

* * * * *

b. Weather Products.

FIS-B does not replace a preflight weather briefing from a source listed in Paragraph 7-1-2, FAA Weather Services, or inflight updates from an FSS or ATC. FIS-B information may be used by the pilot for the safe conduct of flight and aircraft movement; however, the information should not be the only source of weather or aeronautical information. A pilot should be particularly alert and understand the limitations and quality assurance issues associated with individual products. This includes graphical representation of next generation weather radar (NEXRAD) imagery and Notices to Air Missions (NOTAM)/temporary flight restrictions (TFRs).
* * * * *

4–6–4 Flight Planning into RVSM Airspace

* * * * *

c. General Policies for FAA Flight Plan Equipment Suffix. Appendix 4, Table 4-2, allows operators to indicate that the aircraft has both RVSM and Advanced Area Navigation (RNAV) capabilities or has only RVSM capability.

1. The operator will annotate the equipment block of the FAA Flight Plan with the appropriate aircraft equipment suffix from Appendix 4, Table 4-2 and/or Table 4-3.
* * * * *

d. * * *

1. Operators/aircraft that are RVSM-compliant and that file ICAO flight plans will file "/W" in block 10 (Equipment) to indicate RVSM authorization and will also file the appropriate ICAO Flight Plan suffixes to indicate navigation and communication capabilities.
* * * * *

e. Importance of Flight Plan Equipment Suffixes. Military users, and civilians who file stereo route flight plans, must file the appropriate equipment suffix in the equipment block of the FAA Form 7233-1, Flight Plan, or DD Form 175, Military Flight Plan, or FAA Form 7233-4, International Flight Plan, or DD Form 1801, DOD International Flight Plan. All other users must file the appropriate equipment suffix in the equipment block of FAA Form 7233-4, International Flight Plan. The equipment suffix informs ATC:
* * * * *

4–6–6 Guidance on Severe Turbulence and Mountain Wave Activity (MWA)

a. * * *

4. * * *

(a) Explanation of Merging Target Procedures. As described in subparagraph c3 below, ATC will use "merging target procedures" to mitigate the effects of both severe turbulence and MWA. The procedures in subparagraph c3 have been adapted from existing procedures published in FAA Order JO 7110.65, Air Traffic Control, paragraph 5-1-4, Merging Target Procedures. Paragraph 5-1-4 calls for en route controllers to advise pilots of potential traffic that they perceive may fly directly above or below his/her aircraft at minimum vertical separation. In response, pilots are given the option of requesting a radar vector to ensure their radar target will not merge or overlap with the traffic's radar target.
* * * * *

4–7–1 Introduction and General Policies

* * * * *

e. Information useful for flight planning and operations over the Gulf of Mexico under this 50 NM lateral separation policy, as well as information on how to obtain RNP 10 or RNP 4 authorization, can be found in the West Atlantic Route System, Gulf of Mexico, and Caribbean Resource Guide for U.S. Operators located at: **https://www.faa.gov/headquartersoffices/avs/wat-gomex-and-caribbean-resource-guide**
* * * * *

Chapter 5

5–1–1 Preflight Preparation

* * * * *

b. The information required by the FAA to process flight plans is obtained from FAA Form 7233-4, International Flight Plan. Only DOD users, and civilians who file stereo route flight plans, may use FAA Form 7233-1, Flight Plan.

Note: *FAA and DOD Flight Plan Forms are equivalent. Where the FAA specifies Form 7233-1, Flight Plan and FAA Form 7233-4, International Flight Plan, the DOD may substitute their Form DD 175, Military Flight Plan and Form DD-1801, DOD International Flight Plan as necessary. NAS automation systems process and convert data in the same manner, although for computer acceptance, input fields may be adjusted to follow FAA format.*

c. * * *

Reference: *AIM, ¶5-1-3, Notice to Air Missions (NOTAM) System.*

* * * * *

5–1–3 Notice to Air Missions (NOTAM) System

a. General. The NOTAM system provides pilots with time critical aeronautical information that is temporary, or information to be published on aeronautical charts at a later date, or information from another operational publication. The NOTAM is cancelled when the information in the NOTAM is published on the chart or when the temporary condition is returned to normal status. NOTAMs may be disseminated up to 7 days before the start of activity. Pilots can access NOTAM information online via NOTAM Search at: **https://notams.aim.faa.gov/notamSearch/** or from an FSS.

b. Preflight. 14 CFR § 91.103, Preflight Action directs pilots to become familiar with all available information concerning a planned flight prior to departure, including NOTAMs. Pilots may change their flight plan based on available information. Current NOTAM information may affect:

* * * * *

6. Status of navigational aids or radar service availability.

* * * * *

c. ARTCC NOTAMs. Pilots should also review NOTAMs for the ARTCC area (for example, Washington Center (ZDC), Cleveland Center (ZOB), etc.) in which the flight will be operating. You can find the 3 letter code for each ARTCC on the FAA's NOTAM webpage. These NOTAMs may affect the planned flight. Some of the operations include Central Altitude Reservation Function (CARF), Special Use Airspace (SUA), Temporary Flight Restrictions (TFR), Global Positioning System (GPS), Flight Data Center (FDC) changes to routes, wind turbine, and Unmanned Aircraft System (UAS).

* * * * *

d. Destination Update. Pilots should also contact ATC or FSS while en route to obtain updated airfield information for their destination. This is particularly important when flying to the airports without an operating control tower. Snow removal, fire and rescue activities, construction, and wildlife encroachment, may pose hazards to pilots. This information may not be available to pilots prior to arrival/departure.

e. NAVAID NOTAMs. Pilots should check NOTAMs to ensure NAVAIDs required for the flight are in service. A NOTAM is published when a NAVAID is out of service or Unserviceable (U/S). Although a NAVAID is deemed U/S and planned for removal from service, it may be a long time before that NAVAID is officially decommissioned and removed from charts. A NOTAM is the primary method of alerting pilots to its unavailability. It is recommended that pilots using VFR charts should regularly consult the Chart Update Bulletin. This bulletin identifies any updates to the chart that have not yet been accounted for.

f. GPS NOTAMs. The FAA issues information on the status of GPS through the NOTAM system. Operators may find information on GPS satellite outages, GPS testing, and GPS anomalies by specifically searching for GPS NOTAMs prior to flight.

1. The NOTAM system uses the terms UNRELIABLE (UNREL), MAY NOT BE AVAILABLE (AVBL), and NOT AVAILABLE (AVBL) when describing the status of GPS. UNREL indicates 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. Aircraft should have additional navigation equipment for their intended route.

Note: *Unless associated with a known testing NOTAM, pilots should report GPS anomalies, including degraded operation and/or loss of service, as soon as possible via radio or telephone, and via the GPS Anomaly Reporting Form. (See 1-1-13.)*

2. GPS operations may also be NOTAMed for testing. This is indicated in the NOTAM language with the name of the test in parenthesis. When GPS testing NOTAMs are published and testing is actually occurring, ATC will advise pilots requesting or cleared for a GPS or RNAV (GPS) approach, that GPS may not be available and request the pilot's intentions. Table 5-1-1 lists an example of a GPS testing NOTAM.

g. NOTAM Classification. NOTAM information is classified as Domestic NOTAMs (NOTAM D), Flight Data Center (FDC) NOTAMs, International NOTAMs, or Military NOTAMs.

1. NOTAM (D) information is disseminated for all navigational facilities that are part of the National Airspace System (NAS), all public use aerodromes, seaplane bases, and heliports listed in the *Chart Supplement*. U.S. NOTAM (D) information includes taxiway closures, personnel and equipment near or crossing runways, and airport lighting aids that do not affect instrument approach criteria (i.e., VGSI). All NOTAM Ds must have one of the keywords listed in Table 5-1-1, as the first part of the text after the location identifier. These keywords categorize NOTAM Ds by subject, for example, APRON (ramp), RWY (runway), SVC (Services), etc. There are several types of NOTAM Ds:

* * * * *

2. FDC NOTAMs are issued when it is necessary to disseminate regulatory information. FDC NOTAMs include:

(a) * * *

(b) Temporary Flight Restrictions (TFR) restrict entrance to a certain airspace at a certain time, however, some TFRs provide relief if ATC permission is given to enter the area when requested. Online preflight resources for TFRs provide graphics and plain language interpretations.

* * * * *

3. International NOTAMs are published in ICAO format per Annex 15 and distributed to multiple countries.

(a) International NOTAMs issued by the U.S. NOTAM Office use Series A followed by 4 sequential numbers, a slant "/" and a 2-digit number representing the year the NOTAM was issued. International NOTAMs basically duplicate data found in a U.S. Domestic NOTAM.

(b) Not every topic of a U.S. Domestic NOTAM is issued as an International NOTAM by the U.S. The U.S. International NOTAM will be linked to the appropriate U.S. Domestic NOTAM when possible.

* * * * *

4. Military NOTAMs are NOTAMs originated by the U.S. Air Force, Army, Marine, or Navy, and pertaining to military or joint-use navigational aids/airports that are part of the NAS. Military NOTAMs are published in the International NOTAM format and should be reviewed by users of a military or joint-use facility.

h. Security NOTAMs:

* * * * *

TABLE 5–1–1
NOTAM KEYWORDS

Keyword	Definition
RWY *Example*	**Runway** BNA BNA RWY 18/36 CLSD YYMMDDHHMM–YYMMDDHHMM
TWY *Example*	**Taxiway** !BTV BTV TWY C EDGE LGT OBSC YYMMDDHHMM–YYMMDDHHMM
APRON *Example*	**Apron/Ramp** !BNA BNA APRON NORTH APN E 100FT CLSD YYMMDDHHMM–YYMMDDHHMM
AD *Example*	**Aerodrome** !BET BET AD AP ELK NEAR MOVEMENT AREAS YYMMDDHHMM–YYMMDDHHMM
OBST *Example*	**Obstruction** !SJT SJT OBST MOORED BALLOON WI AN AREA DEFINED AS 1NM RADIUS OF SJT 2430FT (510FT AGL) FLAGGED YYMMDDHHMM–YYMMDDHHMM
NAV *Example*	**Navigation Aids** !SHV SHV NAV ILS RWY 32 110.3 COMMISSIONED YYMMDDHHMM–PERM
COM *Example*	**Communications** !INW INW COM REMOTE COM OUTLET 122.6 U/S YYMMDDHHMM–YYMMDDHHMM EST (Note* EST will auto cancel)
SVC *Example*	**Services** !ROA ROA SVC TWR COMMISSIONED YYMMDDHHMM–PERM
AIRSPACE *Example*	**Airspace** !MHV MHV AIRSPACE AEROBATIC ACFT WI AN AREA DEFINED AS 4.3NM RADIUS OF MHV 5500FT–10500FT AVOIDANCE ADZ CTC JOSHUA APP DLY YYMMDDHHMM–YYMMDDHHMM
ODP *Example*	**Obstacle Departure Procedure** !FDC 2/9700 DIK ODP DICKINSON – THEODORE ROOSEVELT RGNL, DICKINSON, ND. TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES AMDT 1... DEPARTURE PROCEDURE: RWY 25, CLIMB HEADING 250 TO 3500 BEFORE TURNING LEFT. ALL OTHER DATA REMAINS AS PUBLISHED. THIS IS TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES, AMDT 1A. YYMMDDHHMM–PERM
SID *Example*	**Standard Instrument Departure** !FDC x/xxxx DFW SID DALLAS/FORT WORTH INTL, DALLAS, TX. PODDE THREE DEPARTURE... CHANGE NOTES TO READ: RWYS 17C/R, 18L/R: DO NOT EXCEED 240KT UNTIL LARRN. RWYS 35L/C, 36L/R: DO NOT EXCEED 240KT UNTIL KMART YYMMDDHHMM–YYMMDDHHMM
STAR *Example*	**Standard Terminal Arrival** !FDC x/xxxx DCA STAR RONALD REAGAN WASHINGTON NATIONAL,WASHINGTON, DC. WZRRD TWO ARRIVAL... SHAAR TRANSITION: ROUTE FROM DRUZZ INT TO WZRRD INT NOT AUTHORIZED. AFTER DRUZZ INT EXPECT RADAR VECTORS TO AML VORTAC YYMMDDHHMM–YYM-MDDHHMM
CHART *Example*	**Chart** !FDC 2/9997 DAL IAP DALLAS LOVE FIELD, DALLAS, TX. ILS OR LOC RWY 31R, AMDT 5... CHART NOTE: SIMULTANEOUS APPROACH AUTHORIZED WITH RWY 31L. MISSED APPROACH: CLIMB TO 1000 THEN CLIMBING RIGHT TURN TO 5000 ON HEADING 330 AND CVE R–046 TO FINGR INT/CVE 36.4 DME AND HOLD. CHART LOC RWY 31L. THIS IS ILS OR LOC RWY 31R, AMDT 5A. YYM-MDDHHMM–PERM
DATA *Example*	**Data** !FDC 2/9700 DIK ODP DICKINSON – THEODORE ROOSEVELT RGNL, DICKINSON, ND. TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES AMDT 1... DEPARTURE PROCEDURE: RWY 25, CLIMB HEADING 250 TO 3500 BEFORE TURNING LEFT. ALL OTHER DATA REMAINS AS PUBLISHED. THIS IS TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES, AMDT 1A. YYMMDDHHMM–PERM
IAP *Example*	**Instrument Approach Procedure** !FDC 2/9997 DAL IAP DALLAS LOVE FIELD, DALLAS, TX. ILS OR LOC RWY 31R, AMDT 5... CHART NOTE: SIMULTANEOUS APPROACH AUTHORIZED WITH RWY 31L. MISSED APPROACH: CLIMB TO 1000 THEN CLIMBING RIGHT TURN TO 5000 ON HEADING 330 AND CVE R–046 TO FINGR INT/CVE 36.4 DME AND HOLD. CHART LOC RWY 31L. THIS IS ILS OR LOC RWY 31R, AMDT 5A. YYM-MDDHHMM–PERM
VFP *Example*	**Visual Flight Procedures** !FDC X/XXXX JFK VFP JOHN F KENNEDY INTL, NEW YORK, NY. PARKWAY VISUAL RWY 13L/R, ORIG...WEATHER MINIMUMS 3000 FOOT CEILING AND 3 MILES VISIBILITY. YYMMDDHHMM–YYMMDDHHMM
ROUTE *Example*	**Route** !FDC x/xxxx ZFW ROUTE ZFW ZKC. V140 SAYRE (SYO) VORTAC, OK TO TULSA (TUL) VORTAC, OK MEA 4300. YYMMDDHHMM–YYMMDDHHMM EST
SPECIAL *Example*	**Special** !FDC x/xxxx JNU SPECIAL JUNEAU INTERNATIONAL, JUNEAU, AK. LDA–2 RWY 8 AMDT 9 PROCEDURE TURN NA. YYMMDDHHMM–YYMMDDHHMM

(continued)

Keyword	Definition
SECURITY *Example*	**Security** !FDC x/xxxx FDC ...SPECIAL NOTICE... THIS IS A RESTATEMENT OF A PREVIOUSLY ISSUED ADVISORY NOTICE. IN THE INTEREST OF NATIONAL SECURITY AND TO THE EXTENT PRACTICABLE, PILOTS ARE STRONGLY ADVISED TO AVOID THE AIRSPACE ABOVE, OR IN PROXIMITY TO SUCH SITES AS POWER PLANTS (NUCLEAR, HYDRO-ELECTRIC, OR COAL), DAMS, REFINERIES, INDUSTRIAL COMPLEXES, MILITARY FACILITIES AND OTHER SIMILAR FACILITIES. PILOTS SHOULD NOT CIRCLE AS TO LOITER IN THE VICINITY OVER THESE TYPES OF FACILITIES.
GPS TESTING *Example*	**Global Positioning System Testing** !GPS 01/028 ZAB NAV GPS (YPG_AZ GPS 21–06)(INCLUDING WAAS, GBAS, AND ADS-B) MAYNOT BE AVBL WI A276NM RADIUS CENTERED AT 332347N1142221W (BLH108023) FL400–UNL, 232NM RADIUS AT FL250, 164NM RADIUS AT 100000FT 160NM RADIUS AT 4000FT AGL 126NM RADIUS AT 50FT AGL DLY 1830–2230 2101281830–2101292230
PRN (GPS) *Example*	Pseudo-random noise code used to differentiate GPS satellites. This code allows any receiver to identify exactly which satellite(s) it is receiving. !GPS GPS NAV PRN 16 U/S 2109231600–2109242300EST

TABLE 5–1–2
CONTRACTIONS COMMONLY FOUND IN NOTAMS

* * * * *

PRN	Pseudo-random Navigation

* * * * *

5–1–4 Operational Information System (OIS)

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5–1–5 Flight Plan—VFR Flights

(See Appendix 4, FAA Form 7233-4—International Flight Plan)

a. The requirements for the filing and activation of VFR flight plans can vary depending in which airspace the flight is operating. Pilots are responsible for activating flight plans with a Flight Service Station. Control tower personnel do not automatically activate VFR flight plans.

1. Within the continental U.S., a VFR flight plan is not normally required.

2. VFR flights (except for DOD and law enforcement flights) into an Air Defense Identification Zone (ADIZ) are required to file DVFR flight plans.

Note: *Detailed ADIZ procedures are found in Section 6, National Security and Interception Procedures, of this chapter. (See 14 CFR Part 99).*

3. Flights within the Washington, DC Special Flight Rules Area have additional requirements that must be met. Visit **http://www.faasafety.gov** for the required Special Awareness Training that must be completed before flight within this area.

4. VFR flight to an international destination requires a filed and activated flight plan.

Note: *ICAO flight plan guidance is published in ICAO Document 4444 PANS-ATM Appendix 2.*

b. It is strongly recommended that a VFR flight plan be filed with a Flight Service Station or equivalent flight plan filing service. When filing, pilots must use FAA Form 7233-4, International Flight Plan or DD Form 1801. Only DOD users, and civilians who file stereo route flight plans, may use FAA Form 7233-1, Flight Plan. Pilots may take advantage of advances in technology by filing their flight plans using any available electronic means. Activating the flight plan will ensure that you receive VFR Search and Rescue services.

c. When a stopover flight is anticipated, it is recommended that a separate flight plan be filed for each leg of the flight.

d. Pilots are encouraged to activate their VFR flight plans with Flight Service by the most expeditious means possible. This may be via radio or other electronic means. VFR flight plan proposals are normally retained for two hours following the proposed time of departure.

e. Pilots may also activate a VFR flight plan by using an assumed departure time. This assumed departure time will cause the flight plan to become active at the designated time. This may negate the need for communication with a flight service station or flight plan filing service upon departure. It is the pilot's responsibility to revise his actual departure time, time en route, or ETA with flight service.

Note: *Pilots are strongly advised to remain mindful when using an assumed departure time. If not updated, search and rescue activities will be based on the assumed departure time.*

f. U.S. air traffic control towers do not routinely activate VFR flight plans. Foreign pilots especially must be mindful of the need to communicate directly with a flight service station, or use an assumed departure time procedure clearly communicated with the flight plan filing service.

g. Although position reports are not required for VFR flight plans, periodic reports to FSSs along the route are good practice. Such contacts permit significant information to be passed to the transiting aircraft and also serve to check the progress of the flight should it be necessary for any reason to locate the aircraft.

h. Pilots flying VFR should fly an appropriate cruising altitude for their direction of flight.

i. When filing a VFR Flight plan, indicate the appropriate aircraft equipment capability as prescribed for an IFR flight plan.

Reference: *AIM, ¶5-1-6, IFR Flights.*

j. ATC radar history data can be useful in finding a downed or missing aircraft; therefore, surveillance equipment should be listed in Item 18. Pilots using commercial GPS tracking services are encouraged to note the specific service in Item 19 N/ (survival equip remarks) of FAA Form 7233-4 or DD Form 1801.

5–1–6 Flight Plan—IFR Flights

(See Appendix 4, FAA Form 7233-4—International Flight Plan)

a. General

1. Use of FAA Form 7233-4 or DD Form 1801 is mandatory for:

(a) Assignment of RNAV SIDs and STARs or other PBN routing,

(b) All civilian IFR flights that will depart U.S. domestic airspace, and

(c) Domestic IFR flights except military/DOD and civilians who file stereo route flight plans.

(d) All military/DOD IFR flights that will depart U.S. controlled airspace.

2. Military/DOD flights using FAA Form 7233-1, or DD Form 175, may not be eligible for assignment of RNAV SIDs or STARs. Military flights desiring assignment of these procedures should file using FAA Form 7233-4 or DD 1801, as described in this section.

3. When filing an IFR flight plan using FAA Form 7233-4 or DD Form 1801, it is recommended that filers include all operable navigation, communication, and surveillance equipment capabilities by adding appropriate equipment qualifiers as shown in Appendix 4, FAA Form 7233-4, International Flight Plan.

4. ATC issues clearances based on aircraft capabilities filed in Items 10 and 18 of FAA Form 7233-4 or DD 1801. Operators should file all capabilities for which the aircraft and crew is certified, capable, and authorized. PBN/capability must be filed in Item 18, Other Information. When filing a capability, ATC expects filers to use that capability; for example, answer a SATVOICE call from ATC if code M1 or M3 is filed in Item 10a.

5. Prior to departure from within, or prior to entering controlled airspace, a pilot must submit a complete flight plan and receive an air traffic clearance, if weather conditions are below VFR minimums. IFR flight plans may be submitted to an FSS or flight plan filing service.

6. Pilots should file IFR flight plans at least 30 minutes prior to estimated time of departure to preclude possible delay in receiving a departure clearance from ATC.

7. In order to provide FAA traffic management units' strategic route planning capabilities, nonscheduled operators conducting IFR operations above FL 230 are requested to voluntarily file IFR flight plans at least 4 hours prior to estimated time of departure (ETD).

8. To minimize your delay in entering Class B, Class C, Class D, and Class E surface areas at destination when IFR weather conditions exist or are forecast at that airport, an IFR flight plan should be filed before departure. Otherwise, a 30-minute delay is not unusual in receiving an ATC clearance because of time spent in processing flight plan data.

9. Traffic saturation frequently prevents control personnel from accepting flight plans by radio. In such cases, the pilot is advised to contact a flight plan filing service for the purpose of filing the flight plan.

10. When requesting an IFR clearance, it is highly recommended that the departure airport be identified by stating the city name and state and/or the airport location identifier in order to clarify to ATC the exact location of the intended airport of departure.

11. Multiple versions of flight plans for the same flight may lead to unsafe conditions and errors within the air traffic system. Pilots must not file more than one flight plan for the same flight without ensuring that the previous flight plan has been successfully removed.

12. When a pilot is aware that the possibility for multiple flight plans on the same aircraft may exist, ensuring receipt of a full route clearance will help mitigate chances of error.

Reference: *AIM, ¶5-1-12, Change in Flight Plan; AIM, ¶5-1-13, Change in Proposed Departure Time.*

b. Airways and Jet Routes Depiction on Flight Plan

1. It is vitally important that the route of flight be accurately and completely described in the flight plan. To simplify definition of the proposed route, and to facilitate ATC, pilots are requested to file via airways or jet routes established for use at the altitude or flight level planned.

2. If flight is to be conducted via designated airways or jet routes, describe the route by indicating the type and number designators of the airway(s) or jet route(s) requested. If more than one airway or jet route is to be used, clearly indicate points of transition. If the transition is made at an unnamed intersection, show the next succeeding NAVAID or named intersection on the intended route and the complete route from that point. Reporting points may be identified by using authorized name/code as depicted on appropriate aeronautical charts. The following two examples illustrate the need to specify the transition point when two routes share more than one transition fix.

Example 1: *ALB J37 BUMPY J14 BHM Spelled out: from Albany, New York, via Jet Route 37 transitioning to Jet Route 14 at BUMPY intersection, thence via Jet Route 14 to Birmingham, Alabama.*

Example 2: *ALB J37 ENO J14 BHM Spelled out: from Albany, New York, via Jet Route 37 transitioning to Jet Route 14 at Smyrna VORTAC (ENO) thence via Jet Route 14 to Birmingham, Alabama.*

3. The route of flight may also be described by naming the reporting points or NAVAIDs over which the flight will pass, provided the points named are established for use at the altitude or flight level planned.

Example: *BWI V44 SWANN V433 DQO Spelled out: from Baltimore–Washington International, via Victor 44 to Swann intersection, transitioning to Victor 433 at Swann, thence via Victor 433 to Dupont.*

4. When the route of flight is defined by named reporting points, whether alone or in combination with airways or jet routes, and the navigational aids (VOR, VORTAC, TACAN, NDB) to be used for the flight are a combination of different types of aids, enough information should be included to clearly indicate the route requested.

Example: *LAX J5 LKV J3 GEG YXC FL 330 J500 VLR J515 YWG Spelled out: from Los Angeles International via Jet Route 5 Lakeview, Jet Route 3 Spokane, direct Cranbrook, British Columbia VOR/DME, Flight Level 330 Jet Route 500 to Langruth, Manitoba VORTAC, Jet Route 515 to Winnipeg, Manitoba.*

5. When filing IFR, it is to the pilot's advantage to file a preferred route.

Reference: *Preferred IFR Routes are described and tabulated in the Chart Supplement U.S.*
Additionally available at U.S.
http://www.fly.faa.gov/Products/Coded_Departure_Routes/NFDC_Preferred_Routes_Database/nfdc_preferred_routes_database.html.

6. ATC may issue a SID or a STAR, as appropriate.

Reference: *AIM, ¶5-2-9, Instrument Departure Procedures (DP)—Obstacle Departure Procedures (ODP) and Standard Instrument Departures (SID), and Diverse Vector Areas (DVA). AIM, ¶5-4-1, Standard Terminal Arrival (STAR) Procedures.*

Note: *Pilots not desiring an RNAV SID or RNAV STAR should enter in Item #18, PBN code: NAV/RNV A0 and/or D0.*

c. Direct Flights

1. All or any portions of the route which will not be flown on the radials or courses of established airways or routes, such as direct route flights, must be defined by indicating the radio fixes over which the flight will pass. Fixes selected to define the route must be those over which the position of the aircraft can be accurately determined. Such fixes automatically become compulsory reporting points for the flight, unless advised otherwise by ATC. Only those navigational aids established for use in a particular structure; i.e., in the low or high structures, may be used to define the en route phase of a direct flight within that altitude structure.

2. The azimuth feature of VOR aids and the azimuth and distance (DME) features of VORTAC and TACAN aids are assigned certain frequency protected areas of airspace which are intended for application to established airway and route use, and to provide guidance for planning flights outside of established airways or routes. These areas of airspace are expressed in terms of cylindrical service volumes of specified dimensions called “class limits” or “categories.”

Reference: *AIM, ¶1-1-8, Navigational Aid (NAVAID) Service Volumes.*

3. An operational service volume has been established for each class in which adequate signal coverage and frequency protection can be assured. To facilitate use of VOR, VORTAC, or TACAN aids, consistent with their operational service volume limits, pilot use of such aids for defining a direct route of flight in controlled airspace should not exceed the following:

(a) Operations above FL 450—Use aids not more than 200 NM apart. These aids are depicted on en route high altitude charts.

(b) Operation off established routes from 18,000 feet MSL to FL 450—Use aids not more than 260 NM apart. These aids are depicted on en route high altitude charts.

(c) Operation off established airways below 18,000 feet MSL—Use aids not more than 80 NM apart. These aids are depicted on en route low altitude charts.

(d) Operation off established airways between 14,500 feet MSL and 17,999 feet MSL in the conterminous U.S.—(H) facilities not more than 200 NM apart may be used.

4. Increasing use of self-contained airborne navigational systems which do not rely on the VOR/VORTAC/TACAN system has resulted in pilot requests for direct routes which exceed NAVAID service volume limits.

5. At times, ATC will initiate a direct route in a surveillance environment which exceeds NAVAID service volume limits. Pilots must adhere to the altitude specified in the clearance.

6. Appropriate airway or jet route numbers may also be included to describe portions of the route to be flown.

Example: *MDW V262 BDF V10 BRL STJ SLN GCK Spelled out: from Chicago Midway Airport via Victor 262 to Bradford, Victor 10 to Burlington, Iowa, direct St. Joseph, Missouri, direct Salina, Kansas, direct Garden City, Kansas.*

Note: *When route of flight is described by radio fixes, the pilot will be expected to fly a direct course between the points named.*

7. Pilots are reminded that they are responsible for adhering to obstruction clearance requirements on those segments of direct routes that are outside of controlled airspace and ATC surveillance capability. The MEAs and other altitudes shown on IFR en route charts pertain to those route segments within controlled airspace, and those altitudes may not meet obstruction clearance criteria when operating off those routes.

Note: *Refer to 14 CFR 91.177 for pilot responsibility when flying random point to point routes.*

d. Area Navigation (RNAV)/Global Navigation Satellite System (GNSS)

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

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

(b) ATC will protect 4 miles either side of the route centerline.

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

2. Pilots of aircraft equipped with approved area navigational equipment may file for RNAV routes throughout the National Airspace System in accordance with the following procedures:

(a) File airport-to-airport flight plans.

(b) File the appropriate indication of RNAV and/or RNP capability in the flight plan.

(c) Plan the random route portion of the flight plan to begin and end over appropriate arrival and departure transition fixes or appropriate navigation aids for the altitude stratum within which the flight will be conducted. The use of normal preferred departure and arrival routes (DP/STAR), where established, is recommended.

(d) File route structure transitions to and from the random route portion of the flight.

(e) Define the random route by waypoints. File route description waypoints by using degree distance fixes based on navigational aids which are appropriate for the altitude stratum.

(f) File a minimum of one route description waypoint for each ARTCC through whose area the random route will be flown. These waypoints must be located within 200 NM of the preceding center’s boundary.

(g) File an additional route description waypoint for each turn point in the route.

(h) Plan additional route description waypoints as required to ensure accurate navigation via the filed route of flight. Navigation is the pilot’s responsibility unless ATC assistance is requested.

(i) Plan the route of flight so as to avoid prohibited and restricted airspace by 3 NM unless permission has been obtained to operate in that airspace and the appropriate ATC facilities are advised.

Note: *To be approved for use in the National Airspace System, RNAV equipment must meet system availability, accuracy, and airworthiness standards. For additional information and guidance on RNAV equipment requirements see Advisory Circular (AC) 20-138 Airworthiness Approval of Positioning and Navigation Systems and AC 90-100 U.S. Terminal and En Route Area Navigation (RNAV) Operations.*

3. Pilots of aircraft equipped with latitude/longitude coordinate navigation capability, independent of VOR/TACAN references, may file for random RNAV using the following procedures:

(a) File airport-to-airport flight plans prior to departure.

(b) File the appropriate RNAV capability certification suffix in the flight plan.

(c) Plan the random route portion of the flight to begin and end over published departure/arrival transition fixes or appropriate navigation aids for airports without published transition procedures. The use of preferred departure and arrival routes, such as DP and STAR, where established, is recommended.

(d) Plan the route of flight so as to avoid prohibited and restricted airspace by 3 NM unless permission has been obtained to operate in that airspace and the appropriate ATC facility is advised.

(e) Define the route of flight after the departure fix, including each intermediate fix (turnpoint) and the arrival fix for the destination airport in terms of latitude/longitude coordinates plotted to the nearest minute or in terms of Navigation Reference System (NRS) waypoints. For latitude/longitude filing the arrival fix must be identified by both the latitude/longitude coordinates and a fix identifier.

Example:

MIA[1] SRQ[2] 3407/10615[3] 3407/11546 TNP[4] LAX[5]

[1] Departure airport.
[2] Departure fix.
[3] Intermediate fix (turning point).
[4] Arrival fix.
[5] Destination airport.

or

ORD[1] IOW[2] KP49G[3] KD34U[4] KL16O[5] OAL[6] MOD2[7] SFO[8]

[1] Departure airport.
[2] Transition fix.
[3] Minneapolis ARTCC waypoint.
[4] Denver ARTCC Waypoint.
[5] Los Angeles ARTCC waypoint.
[6] Transition fix.
[7] Arrival.
[8] Destination airport.

(f) Record latitude/longitude coordinates by two or four figures describing latitude in degrees followed by an N or S, followed by 3 or 5 digits longitude, followed by an E or W. Separate latitude and longitude with a solidus "/." Use leading zeros if necessary.

(g) File at FL 390 or above for the random RNAV portion of the flight.

(h) Fly all routes/route segments on Great Circle tracks.

(i) Make any inflight requests for random RNAV clearances or route amendments to an en route ATC facility.

5–1–7 Flight Plans For Military/DOD Use Only

(See Appendix 4, FAA Form 7233-1, Flight Plan)

Within U.S. controlled airspace, FAA Form 7233-1 or DD Form 175 may be used by DOD aircraft. However, use of the DD Form 1801 by DOD aircraft is recommended for IFR flights and is mandatory for:

a. Any flight that will depart U.S. controlled airspace.

b. Any flight requesting routing that requires Performance Based Navigation.

c. Any flight requesting services that require filing of capabilities only supported in the international flight plan.

Note 1: *The order of flight plan elements in DD Form 175 is equivalent to that of FAA Form 7233-1.*

Note 2: *Civilians who file stereo route flight plans, may use FAA Form 7233-1, Flight Plan.*

5–1–8 Flight Plan—Defense VFR (DVFR) Flights

VFR flights (except for DOD and law enforcement flights) into an ADIZ are required to file DVFR flight plans for security purposes. Detailed ADIZ procedures are found in Section 6, National Security and Interception Procedures, of this chapter.

Reference: *14 CFR Part 99, Security Control for Air Traffic.*

a. DVFR flight plans must be filed using FAA Form 7233-4 or DD Form 1801.

b. Enter the letter "D" in Item 8, Type of Flight, of FAA Form 7233-4 or DD Form 1801.

c. DVFR flights where pilots decline search and rescue coverage must clearly indicate "NORIV" in Item 18 following the indicator "RMK/." This flight plan must still be activated in order to properly notify NORAD, however no flight plan cancellation will be expected.

Example: *RMK/NORIV*

5–1–9 Single Flights Conducted With Both VFR and IFR Flight Plans

a. Flight plans which combine VFR operation on an active VFR flight plan for one portion of a flight, and IFR for another portion, sometimes known as a composite flight plan, cannot be accepted or processed by current en route automation systems.

b. Pilots are free to operate VFR in VFR conditions prior to accepting an IFR clearance from the appropriate control facility, or may cancel an IFR clearance and proceed VFR as desired. However, if a pilot desires to be on an active VFR flight plan, with search and rescue provisions, for the portion of flight not conducted under an IFR clearance, a separate VFR flight plan must be filed, activated, and closed.

c. If a pilot desires to be on an active VFR flight plan prior to or following the IFR portion of the flight, that flight plan must be filed and processed as a distinct and separate flight plan. The VFR flight plan must be opened and closed with either a Flight Service Station or other service provider having the capability to open and close VFR flight plans. Air Traffic Control does not have the ability to determine if an aircraft is operating on an active VFR flight plan and cannot process the activation or cancellation of a VFR flight plan.

d. Pilots may propose to commence the IFR portion of flight at a defined airborne point. This airborne point, or fix, is entered as the departure point in Item 13 of FAA Form 7233-4 or DD Form 1801.

e. Pilots may indicate in the IFR flight plan the intention to terminate the IFR portion of flight at any defined airborne point. The airborne point, or fix, is entered as the destination point in Item 16 of FAA Form 7233-4 or DD Form 1801.

f. Prior to beginning the IFR portion of flight, a pilot must receive an IFR clearance from the appropriate control facility.

g. If the pilot does not desire further clearance after reaching the clearance limit, he or she must advise ATC to cancel the IFR clearance.

5–1–16 RNAV and RNP Operations

a. During the pre-flight planning phase the availability of the navigation infrastructure required for the intended operation, including any non-RNAV contingencies, must be confirmed for the period of intended operation. Availability of the onboard navigation equipment necessary for the route to be flown must be confirmed. Pilots are reminded that on composite VFR to IFR flight plan, or on an IFR clearance, while flying unpublished departures via RNAV

into uncontrolled airspace, the PIC is responsible for terrain and obstruction clearance until reaching the MEA/MIA/MVA/OROCA.

Note: *OROCA is a published altitude which provides 1,000 feet of terrain and obstruction clearance in the U.S. (2,000 feet of clearance in designated mountainous areas). 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.*

* * * * *

5–1–17 Cold Temperature Operations

a. Pilots should begin planning for cold temperature operations during the preflight planning phase. Cold temperatures produce barometric altimetry errors, which affect instrument flight procedures. Currently there are two temperature limitations that may be published in the notes box of the middle briefing strip on an instrument approach procedure (IAP). The two published temperature limitations are:

1. A temperature range limitation associated with the use of baro-VNAV that may be published on an United States PBN IAP titled RNAV (GPS) or RNAV (RNP); and/or

2. A Cold Temperature Airport (CTA) limitation designated by a snowflake ICON and temperature in Celsius (C) that is published on every IAP for the airfield.

b. Pilots should request the lowest forecast temperature +/–1 hour for arrival and departure operations. If the temperature is forecast to be outside of the baro-VNAV or at or below the CTA temperature limitation, consider the following:

1. When using baro-VNAV with an aircraft that does not have an automated temperature compensating function, pilots should plan to use the appropriate minima and/or IAP.

(a) The LNAV/VNAV line of minima on an RNAV (GPS) may not be used without an approved automated temperature compensating function if the temperature is outside of the baro-VNAV temperature range limitation. The LNAV minima may be used.

(b) The RNAV (RNP) procedure may not be accomplished without an approved automated temperature compensating function if the temperature is outside of the baro-VNAV temperature range limitation.

2. If the temperature is forecast to be at or below the published CTA temperature, pilots should calculate a correction for the appropriate segment/s or a correction for all the segments if using the "All Segments Method."

Pilots should review the operating procedures for the aircraft's temperature compensating system when planning to use the system for any cold temperature corrections. Any planned altitude correction for the intermediate and/or missed approach holding segments must be coordinated with ATC. Pilots do not have to advise ATC of a correction in the final segment.

Note: *The charted baro-VNAV temperature range limitation does not apply to pilots operating aircraft with an airworthiness approval to conduct an RNAV (GPS) approach to LNAV/VNAV minimums with the use of SBAS vertical guidance.*

Reference: *AIM, Chapter 7, Section 3, Cold Temperature Barometric Altimeter Errors, Setting Procedures, and Cold Temperature Airports (CTA).*

5–2–7 Departure Restrictions, Clearance Void Times, Hold for Release, and Release Times

a. ATC may assign departure restrictions, clearance void times, hold for release, and release times, when necessary, to separate departures from other traffic or to restrict or regulate the departure flow. Departures from an airport without an operating control tower must be issued either a departure release (along with a release time and/or void time if applicable), or a hold for release.

Reference: *FAA Order JO 7110.65, ¶4-3-4, Departure Release, Hold for Release, Release Times, Departure Restrictions, and Clearance Void Times.*

1. * * *

Note 2: *If the clearance void time expires, it 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 and is acknowledged by the pilot.*

Note 3: *Pilots who depart at or after their clearance void time are not afforded IFR separation and may be in violation of 14 CFR Section 91.173 which requires that pilots receive an appropriate ATC clearance before operating IFR in controlled airspace.*

Note 4: *Pilots who choose to depart VFR after their clearance void time has expired should not depart using the previously assigned IFR transponder code.*

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5–2–8 Departure Control

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b. Departure Control utilizing radar will normally clear aircraft out of the terminal area using vectors, a diverse vector area (DVA), or published DPs.

1. When a departure is to be vectored immediately following takeoff using vectors, a DVA, or published DPs that begins with an ATC assigned heading off the ground, the pilot will be advised prior to takeoff of the initial heading to be flown but may not be advised of the purpose of the heading. When ATC assigns an initial heading with the takeoff clearance that will take the aircraft off an assigned procedure (for example, an RNAV SID with a published lateral path to a waypoint and crossing restrictions from the departure end of runway), the controller will assign an altitude to maintain with the initial heading and, if necessary, a speed to maintain.

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5–2–9 Instrument Departure Procedures (DP)— Obstacle Departure Procedures (ODP), Standard Instrument Departures (SID), and Diverse Vector Areas (DVA)

* * * * *

e. * * *

7. A Visual Climb Over Airport (VCOA) procedure is 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 "at or above" altitude. At this point, the pilot may proceed in instrument meteorological conditions to the first en route fix using a diverse departure, or to proceed via a published routing to a fix from where the aircraft may join the IFR en route structure, while maintaining a climb gradient of at least 200 feet per nautical mile. 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. Pilots are expected to remain within the distance prescribed in the

published visibility minimums during the climb over the airport until reaching the "at or above" altitude for the VCOA procedure. If no additional routing is published, then the pilot may proceed in accordance with their IFR clearance. If additional routing is published after the "at-or-above" altitude, the pilot must comply with the route to a fix that may include a climb-in-holding pattern to reach the MEA/MIA for the en route portion of their IFR flight. 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.

Example: *TAKEOFF MINIMUMS: Rwy 32, standard with minimum climb of 410' per NM to 3000' or 1100-3 for VCOA.*

VCOA: Rwy 32, obtain ATC approval for VCOA when requesting IFR clearance. Climb in visual conditions to cross Broken Bow Muni/Keith Glaze Field at or above 3500' before proceeding on course.

f. * * *

1. Obstacle clearance responsibility also rests with the pilot when he/she chooses to climb in visual conditions in lieu of flying a DP and/or depart under increased takeoff minima rather than fly the climb gradient. Standard takeoff minima are one statute mile for aircraft having two engines or less and one-half statute mile for aircraft having more than two engines. Specified ceiling and visibility minima will allow visual avoidance of obstacles during the initial climb at the standard climb gradient. When departing using the VCOA, obstacle avoidance is not guaranteed if the pilot maneuvers farther from the airport than the published visibility minimum for the VCOA prior to reaching the published VCOA altitude. DPs may also contain what are called Low Close in Obstacles. These obstacles are less than 200 feet above the departure end of runway elevation and within one NM of the runway end and do not require increased takeoff minimums. These obstacles are identified on the SID chart or in the Take-off Minimums and (Obstacle) Departure Procedures section of the U. S. Terminal Procedure booklet. These obstacles are especially critical to aircraft that do not lift off until close to the departure end of the runway or which climb at the minimum rate. Pilots should also consider drift following lift-off to ensure sufficient clearance from these obstacles. That segment of the procedure that requires the pilot to see and avoid obstacles ends when the aircraft crosses the specified point at the required altitude. In all cases continued obstacle clearance is based on having climbed a minimum of 200 feet per nautical mile to the specified point and then continuing to climb at least 200 foot per nautical mile during the departure until reaching the minimum enroute altitude unless specified otherwise.

* * * * *

3. The DVA may be established below the Minimum Vectoring Altitude (MVA) or Minimum IFR Altitude (MIA) in a radar environment at the request of Air Traffic. This type of DP meets the TERPS criteria for diverse departures, obstacles, and terrain avoidance in which vectors below the MVA/MIA may be issued to departing aircraft. The DVA has been assessed for departures which do not follow a specific ground track, but will remain within the specified area. Use of a DVA is valid only when aircraft are permitted to climb uninterrupted from the departure runway to the MVA/MIA (or higher). ATC will not assign an altitude below the MVA/MIA within a DVA. At locations that have a DVA, ATC is not permitted to utilize a SID and DVA concurrently.

* * * * *

5–4–5 Instrument Approach Procedure (IAP) Charts

* * * * *

c. The **Minimum Safe Altitudes (MSA)** is published for emergency use on IAP or departure procedure (DP) graphic charts. MSAs provide 1,000 feet of clearance over all obstacles, but do not necessarily assure acceptable navigation signal coverage. The MSA depiction on the plan view of an approach chart or on a DP graphic chart contains the identifier of the center point of the MSA, the applicable radius of the MSA, a depiction of the sector(s), and the minimum altitudes above mean sea level which provide obstacle clearance. For conventional navigation systems, the MSA is normally based on the primary omnidirectional facility on which the IAP or DP graphic chart is predicated, but may be based on the airport reference point (ARP) if no suitable facility is available. For RNAV approaches or DP graphic charts, the MSA is based on an RNAV waypoint. MSAs normally have a 25 NM radius; however, for conventional navigation systems, this radius may be expanded to 30 NM if necessary to encompass the airport landing surfaces. A single sector altitude is normally established, however when the MSA is based on a facility and it is necessary to obtain relief from obstacles, an MSA with up to four sectors may be established.

* * * * *

e. * * *

1. The minimum vectoring altitude in each sector provides 1,000 feet above the highest obstacle in nonmountainous areas and 2,000 feet above the highest obstacle in designated mountainous areas. Where lower MVAs are required in designated mountainous areas to achieve compatibility with terminal routes or to permit vectoring to an IAP, 1,000 feet of obstacle clearance may be authorized with the use of ATC surveillance. The minimum vectoring altitude will provide at least 300 feet above the floor of controlled airspace.

Note: *OROCA is a published altitude which provides 1,000 feet of terrain and obstruction clearance in the U.S. (2,000 feet of clearance in designated mountainous areas). 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.*

* * * * *

f. * * *

FIGURE 5–4–12
Example of LNAV and Circling Minima Lower Than LNAV/VNAV DA.
Harrisburg International RNAV (GPS) RWY 13

CATEGORY	A	B	C	D
LPV DA	**558/24** 250 (300–½)			
LNAV/VNAV DA	**1572–5** (1264 (1300–5)			
LNAV MDA	**1180/24** 872 (900–½)	**1180/40** 872 (900–¾)	**1180/2** 870 (900–2)	**1180/2¼** 872 (900–2¼)
CIRCLING	**1180–1** 870 (900–1)	**1180–1¼** 870 (900–1¼)	**1180–2½** 870 (900–2½)	**1180–2¾** 870 (900–2¾)

* * * * *

m. * * *

7. * * *

(f) Published Temperature Limitations. There are currently two temperature limitations that may be published in the notes box of the middle briefing strip on an instrument approach procedure (IAP). The two published temperature limitations are:

(1) A temperature range limitation associated with the use of baro-VNAV that may be published on a United States PBN IAP titled RNAV (GPS) or RNAV (RNP); and/or

(2) A Cold Temperature Airport (CTA) limitation designated by a snowflake ICON and temperature in Celsius (C) that is published on every IAP for the airfield.

Reference: *AIM, Chapter 7, Section 3, Cold Temperature Barometric Altimeter Errors, Setting Procedures and Cold Temperature Airports (CTA).*

* * * * *

5–4–7 Instrument Approach Procedures

a. Aircraft approach category means a grouping of aircraft based on a speed of V_{REF} at the maximum certified landing weight, if specified, or if V_{REF} is not specified, 1.3 V_{SO} at the maximum certified landing weight. V_{REF}, V_{SO}, and the maximum certified landing weight are those values as established for the aircraft by the certification authority of the country of registry. A pilot must maneuver the aircraft within the circling approach protected area (see Figure 5-4-27) to achieve the obstacle and terrain clearances provided by procedure design criteria.

* * * * *

5–4–18 RNP AR (Authorization Required) Instrument Procedures

a. RNP AR procedures require authorization analogous to the special authorization required for Category II or III ILS procedures. All operators require specific authorization from the FAA to fly any RNP AR approach or departure procedure. The FAA issues RNP AR authorization via operations specification (OpSpec), management specification (MSpec), or letter of authorization (LOA). There are no exceptions. Operators can find comprehensive information on RNP AR aircraft eligibility, operating procedures, and training requirements in AC 90-101, Approval Guidance for RNP Procedures with AR.

b. Unique characteristics of RNP AR Operations Approach title. The FAA titles all RNP AR instrument approach procedures (IAP) as “RNAV (RNP) RWY XX.” Internationally, operators may find RNP AR IAPs titled “RNP RWY XX (AR).” All RNP AR procedures will clearly state “Authorization Required” on the procedure chart.

c. RNP value. RNP AR procedures are characterized by use of a lateral Obstacle Evaluation Area (OEA) equal to two times the RNP value (2 x RNP) in nautical miles. No secondary lateral OEA or additional buffers are used. RNP AR procedures require a minimum lateral accuracy value of RNP 0.30. Each published line of minima in an RNP AR procedure has an associated RNP value that defines the procedure’s lateral performance requirement in the Final Approach Segment. Each approved RNP AR operator’s FAA-issued authorization will identify a minimum authorized RNP approach value. This value may vary depending on aircraft configuration or operational procedures (e.g., use of flight director or autopilot).

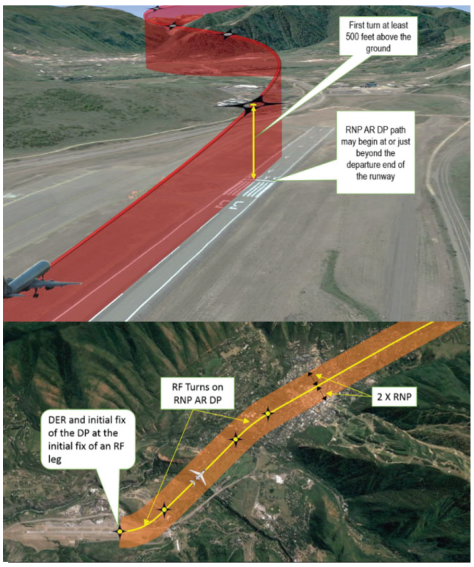
d. Radius-to-fix (RF) legs. Many RNP AR IFPs contain RF legs. Aircraft eligibility for RF legs is required in any authorization for RNP AR operations.

e. Missed Approach RNP value less than 1.00 NM. Some RNP AR IFPs require an RNP lateral accuracy value of less than 1.00 NM in the missed approach segment. The operator’s FAA-issued RNP AR authorization will specify whether the operator may fly a missed approach procedure requiring a lateral accuracy value less than 1.00 NM. AC 90-101 identifies specific operating procedures and training requirements applicable to this aspect of RNP AR procedures.

f. Non-standard speeds or climb gradients. RNP AR approaches may require non-standard approach speeds and/or missed approach climb gradients. RNP AR approach charts will reflect any non-standard requirements and pilots must confirm they can meet those requirements before commencing the approach.

g. RNP AR Departure Procedures (RNP AR DP). RNP AR approach authorization is a mandatory prerequisite for an operator to be eligible to perform RNP AR DPs. RNP AR DPs can utilize a minimum RNP value of RNP 0.30, may include higher than standard climb gradients, and may include RF turns. Close in RF turns associated with RNP AR DPs may begin as soon as the departure end of the runway (DER). For specific eligibility guidance, operators should refer to AC 90-101.

FIGURE 5–4–26
Example of an RNP AR DP



5–4–20 Approach and Landing Minimums

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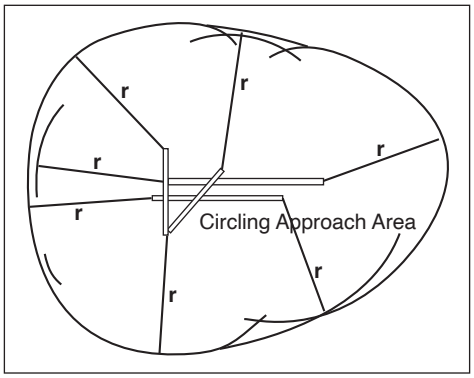
b. * * *

1. Circling approach protected areas are defined by the tangential connection of arcs drawn from each runway end (see Figure 5-4-27). Circling approach protected areas developed prior to late 2012 used fixed radius distances, dependent on aircraft approach category, as shown in the table on page B2 of the U.S. TPP. The approaches using standard circling approach areas can be identified by the absence of the “negative C” symbol on the circling line of minima. Circling approach protected areas developed after late 2012 use the radius distance shown in the table on page B2 of the U.S. TPP, dependent on aircraft approach category, and the altitude of the circling MDA, which accounts for true airspeed increase with altitude. The approaches using expanded circling approach areas can be identified by the presence of the “negative C” symbol on the circling line of minima (see Figure 5-4-28). Be-

cause of obstacles near the airport, a portion of the circling area may be restricted by a procedural note; for example, “Circling NA E of RWY 17–35.” Obstacle clearance is provided at the published minimums (MDA) for the pilot who makes a straight-in approach, side-steps, or circles. Once below the MDA the pilot must see and avoid obstacles. Executing the missed approach after starting to maneuver usually places the aircraft beyond the MAP. The aircraft is clear of obstacles when at or above the MDA while inside the circling area, but simply joining the missed approach ground track from the circling maneuver may not provide vertical obstacle clearance once the aircraft exits the circling area. Additional climb inside the circling area may be required before joining the missed approach track. See paragraph 5-4-21, Missed Approach, for additional considerations when starting a missed approach at other than the MAP.

FIGURE 5–4–27
Final Approach Obstacle Clearance



Note: *Circling approach area radii vary according to approach category and MSL circling altitude due to TAS changes—see Figure 5-4-28.*

FIGURE 5–4–28
Standard and Expanded Circling Approach Radii in the U.S. TPP

STANDARD CIRCLING APPROACH MANEUVERING RADIUS

Circling approach protected areas developed prior to late 2012 used the radius distances shown in the following table, expressed in nautical miles (NM), dependent on aircraft approach category. The approaches using standard circling approach areas can be identified by the absence of the C symbol on the circling line of minima.

Circling MDA in feet MSL	Approach Category and Circling Radius (NM)				
	CAT A	CAT B	CAT C	CAT D	CAT E
All Altitudes	1.3	1.5	1.7	2.3	4.5

C EXPANDED CIRCLING APPROACH MANEUVERING AIRSPACE RADIUS

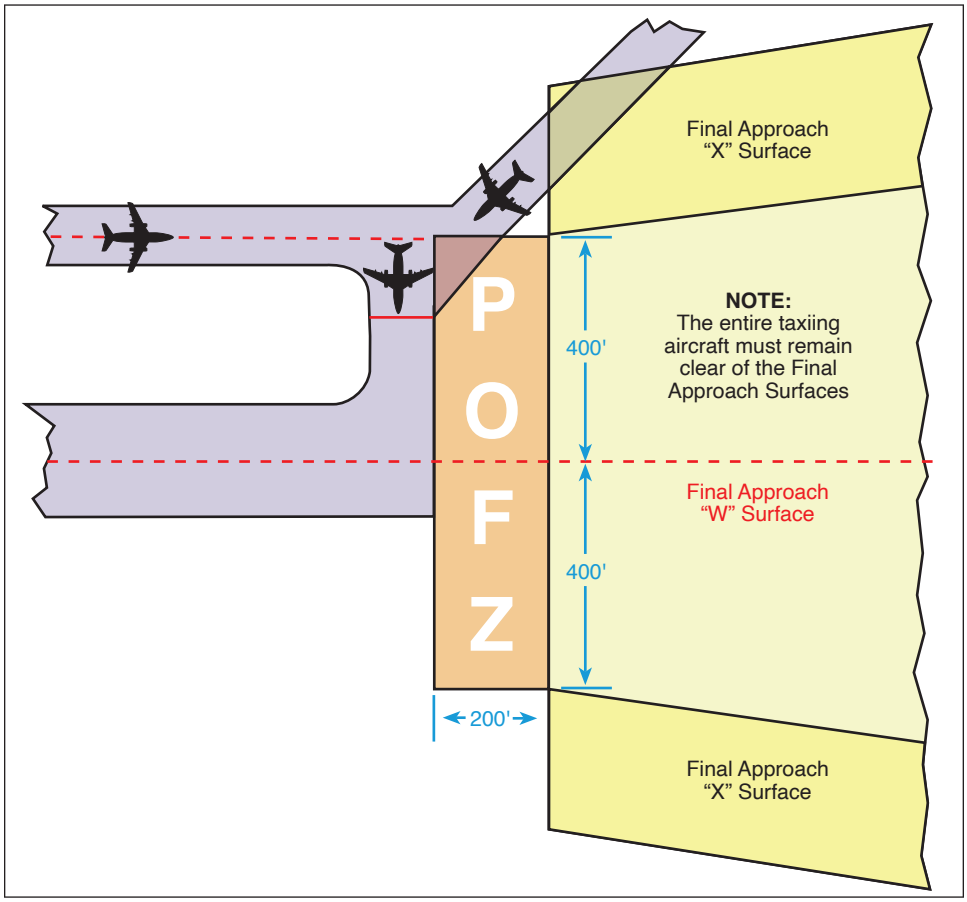
Circling approach protected areas developed after late 2012 use the radius distances shown in the following table, expressed in nautical miles (NM), dependent on aircraft approach category, and the altitude of the circling MDA, which accounts for true airspeed increase with altitude. The approaches using expanded circling approach areas can be identified by the presence of the C symbol on the circling line of minima.

Circling MDA in feet MSL	Approach Category and Circling Radius (NM)				
	CAT A	CAT B	CAT C	CAT D	CAT E
1000 or less	1.3	1.7	2.7	3.6	4.5
1001–3000	1.3	1.8	2.8	3.7	4.6
3001–5000	1.3	1.8	2.9	3.8	4.8
5001–7000	1.3	1.9	3.0	4.0	5.0
7001–9000	1.4	2.0	3.2	4.2	5.3
9001 and above	1.4	2.1	3.3	4.4	5.5

* * * * *

2. * * *

FIGURE 5–4–29
Precision Obstacle Free Zone (POFZ)



c. Straight-in Minimums are shown on the IAP when the final approach course is within 30 degrees of the runway alignment and a normal descent can be made from the IFR altitude shown on the IAP to the runway surface. When either the normal rate of descent or the runway alignment factor of 30 degrees is exceeded, a straight-in minimum is not published and a circling minimum applies. The fact that a straight-in minimum is not published does not preclude pilots from landing straight-in if they have the active runway in sight and have sufficient time to make a normal approach for landing. Under such conditions and when ATC has cleared them for landing on that runway, pilots are not expected to circle even though only circling minimums are published. If they desire to circle, they should advise ATC.

* * * * *

5–4–21 Missed Approach

* * * * *

c. If visual reference is lost while circling-to-land from an instrument approach, the missed approach specified for that particular procedure must be followed (unless an alternate missed approach procedure is specified by ATC). To become established on the prescribed missed approach course, the pilot should make an initial climbing turn toward the landing runway and continue the turn until established on the missed approach course. Inasmuch as the circling maneuver may be accomplished in more than one direction, different patterns will be required to become established on the prescribed missed approach course, depending on the aircraft position at the time visual reference is lost. Adherence to the procedure will help assure that an aircraft will remain laterally within the circling and missed approach obstruction clearance areas. Refer to paragraph h concerning vertical obstruction clearance when starting a missed approach at other than the MAP. (See Figure 5-4-30.)

d. 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 Figure 5-4-31.)

FIGURE 5–4–30
Circling and Missed Approach Obstruction Clearance Areas

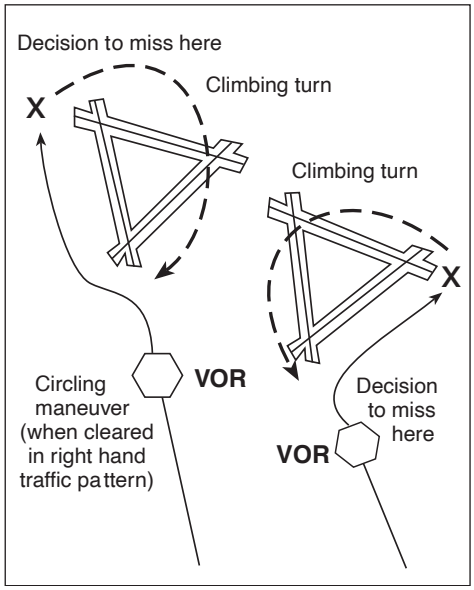
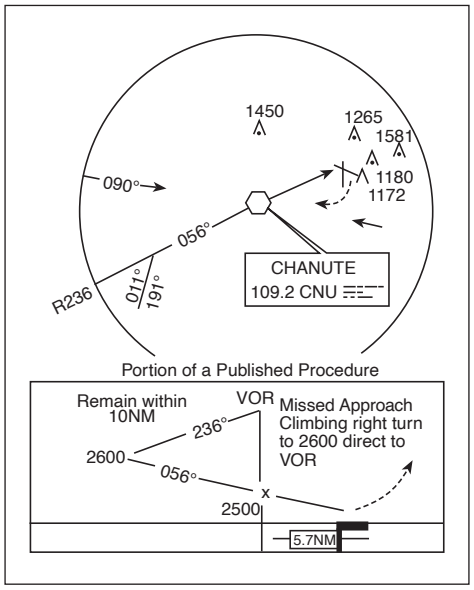


FIGURE 5–4–31
Missed Approach



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5–4–22 Use of Enhanced Flight Vision Systems (EFVS) on Instrument Approaches

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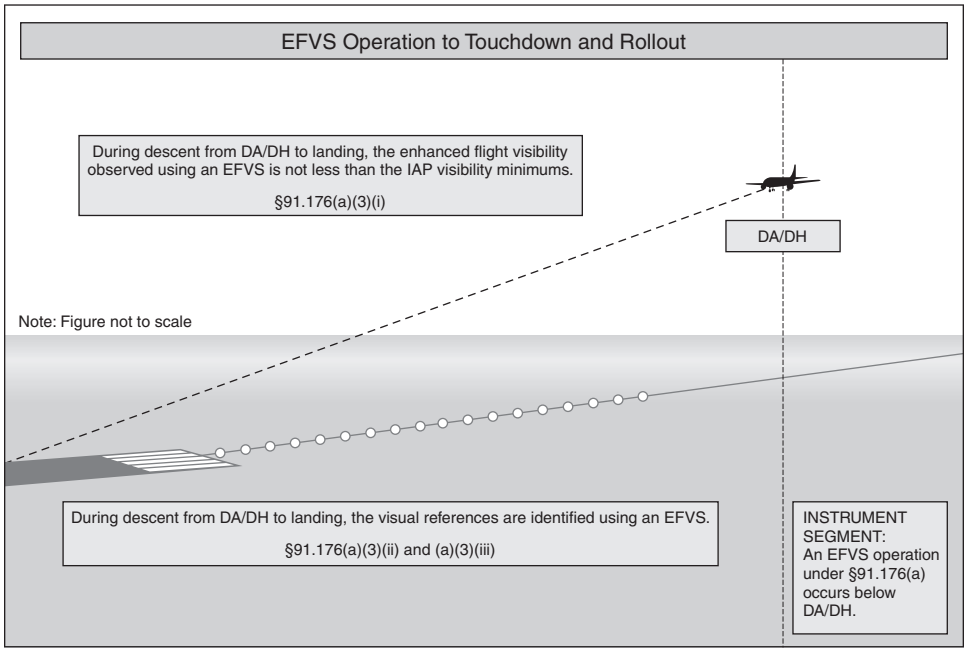
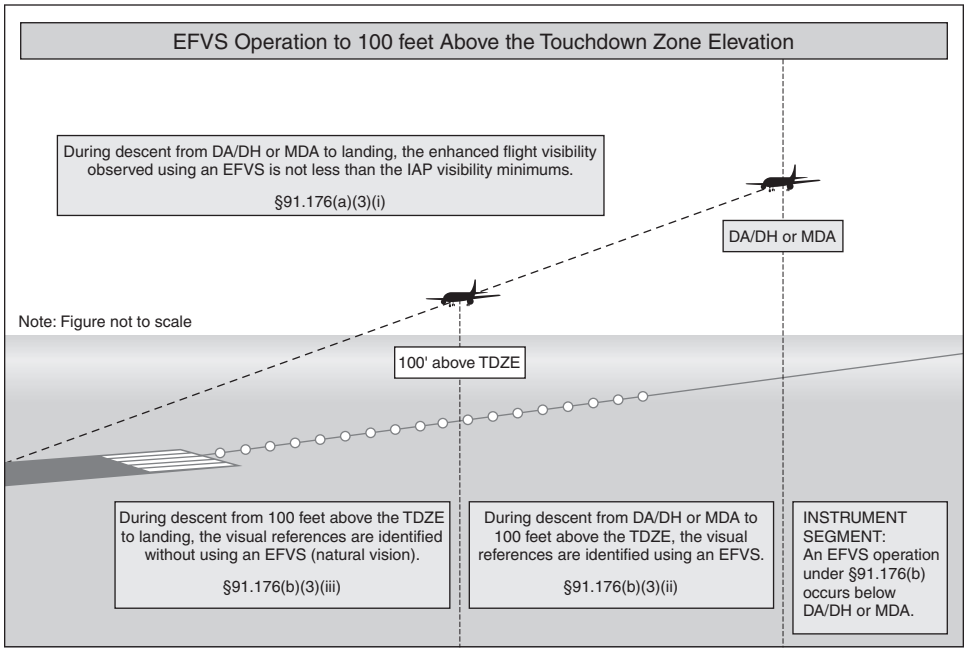
b. EFVS Operations to Touchdown and Rollout. An EFVS operation to touchdown and rollout is an operation in which the pilot uses the enhanced vision imagery provided by an EFVS in lieu of natural vision to descend below DA or DH to touchdown and rollout. (See Figure 5-4-32.) These operations may be conducted only on Standard Instrument Approach Procedures (SIAP) or special IAPs that have a DA or DH (for example, precision or APV approach). An EFVS operation to touchdown and rollout may not be conducted on an approach that has circling minimums. The regulations for EFVS operations to touchdown and rollout can be found in 14 CFR §91.176(a).

FIGURE 5–4–32
EFVS Operation to Touchdown and Rollout



c. EFVS Operations to 100 Feet Above the TDZE. An EFVS operation to 100 feet above the TDZE is an operation in which the pilot uses the enhanced vision imagery provided by an EFVS in lieu of natural vision to descend below DA/DH or MDA down to 100 feet above the TDZE. (See Figure 5-4-33.) To continue the approach below 100 feet above the TDZE, a pilot must have sufficient flight visibility to identify the required visual references using natural vision and must continue to use the EFVS to ensure the enhanced flight visibility meets the visibility requirements of the IAP being flown. These operations may be conducted on SIAPs or special IAPs that have a DA/DH or MDA. An EFVS operation to 100 feet above the TDZE may not be conducted on an approach that has circling minimums. The regulations for EFVS operations to 100 feet above the TDZE can be found in 14 CFR §91.176(b).

FIGURE 5–4–33
EFVS Operation to 100 ft Above the TDZE



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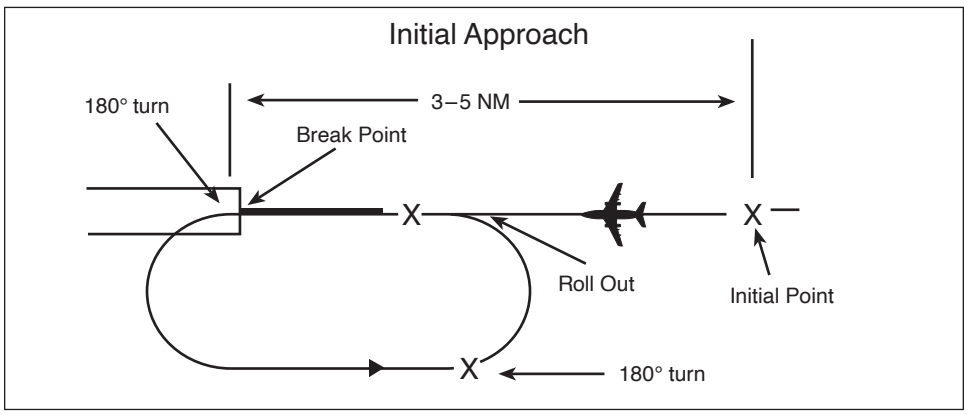
5–4–27 Overhead Approach Maneuver

a. Pilots operating in accordance with an IFR flight plan in Visual Meteorological Conditions (VMC) may request ATC authorization for an overhead maneuver. An overhead maneuver is not an instrument approach procedure. Overhead maneuver patterns are developed at airports where aircraft have an operational need to conduct the maneuver. An aircraft conducting an overhead maneuver is considered to be VFR and the IFR flight plan is cancelled when the aircraft reaches the initial point on the initial approach portion of the maneuver. (See Figure 5-4-34.) The existence of a standard overhead maneuver pattern does not eliminate the possible requirement for an aircraft to conform to conventional rectangular patterns if an overhead maneuver cannot be approved. Aircraft operating to an airport without a functioning control tower must initiate cancellation of an IFR flight plan prior to executing the overhead maneuver. Cancellation of the IFR flight plan must be accomplished after crossing the landing threshold on the initial portion of the maneuver or after landing. Controllers may authorize an overhead maneuver and issue the following to arriving aircraft:

* * * * *

FIGURE 5–4–34
Overhead Maneuver



5–5–1 General

a. The roles and responsibilities of the pilot and controller for effective participation in the ATC system are contained in several documents. Pilot responsibilities are in the CFRs and the air traffic controllers' are in the FAA Order JO 7110.65, Air Traffic Control, and supplemental FAA directives. Additional and supplemental information for pilots can be found in the current Aeronautical Information Manual (AIM), Notices to Air Missions, Advisory Circulars and aeronautical charts. Since there are many other excellent publications produced by nongovernment organizations, as well as other government organizations, with various updating cycles, questions concerning the latest or most current material can be resolved by cross-checking with the above mentioned documents.
* * * * *

5–5–4 Instrument Approach

a. * * *

4. There are currently two temperature limitations that may be published in the notes box of the middle briefing strip on an instrument approach procedure (IAP). The two published temperature limitations are:

(a) A temperature range limitation associated with the use of baro-VNAV that may be published on a United States PBN IAP titled RNAV (GPS) or RNAV (RNP); and/or

(b) A Cold Temperature Airport (CTA) limitation designated by a snowflake ICON and temperature in Celsius (C) that is published on every IAP for the airfield.

5. Any planned altitude correction for the intermediate and/or missed approach holding segments must be coordinated with ATC. Pilots do not have to advise ATC of a correction in the final segment.

Reference: *AIM, Chapter 7, Section 3, Cold Temperature Barometric Altimeter Errors, Setting Procedures, and Cold Temperature Airports (CTA).*
* * * * *

5–5–5 Missed Approach

a. * * *

5. Cold Temperature Airports (CTA) are designated by a snowflake ICON and temperature in Celsius (C) that are published in the notes box of the middle briefing strip on an instrument approach procedure (IAP). Pilots should apply a cold temperature correction to the missed approach final holding altitude when the reported temperature is at or below the CTA temperature limitation. Pilots must inform ATC of the correction.

Reference: *AIM, Chapter 7, Section 3, Cold Temperature Barometric Altimeter Errors, Setting Procedures, and Cold Temperature Airports (CTA)*
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5–5–6 Vectors

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b. * * *

3. Except where authorized for radar approaches, radar departures, special VFR, or when operating in accordance with vectors below minimum altitude procedures, vector IFR aircraft at or above minimum vectoring altitudes.
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5–5–10 Traffic Advisories (Traffic Information)

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b. * * *

4. Controllers are required to issue traffic advisories to each aircraft operating on intersecting or nonintersecting converging runways where projected flight paths will cross.

5–5–14 Instrument Departures

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b. * * *

5. At locations with both SIDs and DVAs, ATC will provide an amended departure clearance to cancel a previously assigned SID and subsequently utilize a DVA or vice versa. The amended clearance will be provided to the pilot in a timely manner so that the pilot may confirm adequate climb performance exists to determine if the amended clearance is acceptable, and brief the changes in advance of entering the runway.

6. At locations with a DVA, ATC is not permitted to utilize a SID and DVA concurrently.

5–6–8 Foreign State Aircraft Operations

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b. Diplomatic Clearances. Foreign state aircraft may operate to or from, within, or in transit of U.S. territorial airspace only when authorized by the U.S. State Department by means of a diplomatic clearance, except as described in subparagraph 5-6-8i below.
* * * * *

h. Foreign state aircraft operating with a U.S. Department of State issued Diplomatic Clearance Number in the performance of official missions are authorized to deviate from the Automatic Dependent Surveillance–Broadcast (ADS-B) Out requirements contained in 14 CFR §§91.225 and 91.227. All foreign state aircraft and/or operators associated with Department of Defense missions should contact their respective offices for further information on handling. Foreign state aircraft not associated with Department of Defense should coordinate with U.S. Department of State through the normal diplomatic clearance process.

i. Diplomatic Clearance Exceptions. State aircraft operations on behalf of the governments of Canada and Mexico conducted for the purposes of air ambulance, firefighting, law enforcement, search and rescue, or emergency evacuation are authorized to transit U.S. territorial airspace within 50 NM of their respective borders with the U.S., with or without an active flight plan, provided they have received and continuously transmit an ATC assigned transponder code. State aircraft operations on behalf of the governments of Canada and Mexico conducted under this subparagraph 5-6-8h are not required to obtain a diplomatic clearance from the U.S. State Department.

Chapter 7

7–1–2 FAA Weather Services

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b. The FAA maintains an extensive surface weather observing program. Airport observations (METAR and SPECI) in the U.S. are provided by automated observing systems. Various levels of human oversight of the METAR and SPECI reports and augmentation may be provided at select larger airports by either government or contract personnel qualified to report specified weather elements that cannot be detected by the automated observing system. The requirements to issue SPECI reports are detailed in Table 7-1-1.

TABLE 7–1–1
SPECI ISSUANCE TABLE

1	**Wind Shift**	Wind direction changes by 45° or more, in less than 15 minutes, and the wind speed is 10 kt or more throughout the wind shift.
2	**Visibility**	The surface visibility (as reported in the body of the report): • Decreases to less than 3 SM, 2 SM, 1 SM, ½ SM, ¼ SM or the lowest standard instrument approach procedure (IAP) minimum.[1] • Increases to equal to or exceed 3 SM, 2 SM, 1 SM, ½ SM, ¼ SM or the lowest standard IAP minimum.[1] [1] As published in the U.S. Terminal Procedures. If none published, use ½ SM.
3	**RVR**	The highest value from the designated RVR runway decreases to less than 2,400 ft during the preceding 10 minutes; or, if the RVR is below 2,400 ft, increases to equal to or exceed 2,400 ft during the preceding 10 minutes. U.S. military stations may not report a SPECI based on RVR.
4	**Tornado, Funnel Cloud, or Waterspout**	• Is observed. • Disappears from sight or ends.
5	**Thunderstorm**	• Begins (a SPECI is not required to report the beginning of a new thunderstorm if one is currently reported). • Ends.
6	**Precipitation**	• Hail begins or ends. • Freezing precipitation begins, ends, or changes intensity. • Ice pellets begin, end, or change intensity. • Snow begins, ends, or changes intensity.
7	**Squalls**	When a squall occurs. (Wind speed suddenly increases by at least 16 knots and is sustained at 22 knots or more for at least one minute.)
8	**Ceiling**	The ceiling changes[1] through: • *3,000 ft.* • *1,500 ft.* • *1,000 ft.* • *500 ft.* • *The lowest standard IAP minimum.*[2] [1] "Ceiling change" means that it forms, dissipates below, decreases to less than, or, if below, increases to equal or exceed the values listed. [2] As published in the U.S. Terminal Procedures. If none published, use 200 ft.
9	**Sky Condition**	A layer of clouds or obscurations aloft is present below 1,000 ft and no layer aloft was reported below 1,000 ft in the preceding METAR or SPECI.
10	**Volcanic Eruption**	When an eruption is first noted.
11	**Aircraft Mishap**	Upon notification of an aircraft mishap,[1] unless there has been an intervening observation. [1] "Aircraft mishap" is an inclusive term to denote the occurrence of an aircraft accident or incident.
12	**Miscellaneous**	Any other meteorological situation designated by the responsible agency of which, in the opinion of the observer, is critical.

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7–1–5 Preflight Briefing

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b. * * *

8. Notices to Air Missions (NOTAMs).

* * * * *

7–1–8 Inflight Weather Advisory Broadcasts

a. ARTCCs broadcast a Convective SIGMET, SIGMET, AIRMET, Urgent Pilot Report, or CWA alert once on all frequencies, except emergency frequencies, when any part of the area described is within 150 miles of the airspace under their jurisdiction. These broadcasts advise pilots of the availability of hazardous weather advisories and to contact the nearest Flight Service facility for additional details.

* * * * *

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

Reference: *FAA Order JO 7110.65, ¶2-6-6, Hazardous Inflight Weather Advisory.*

* * * * *

7–1–9 Flight Information Services (FIS)

* * * * *

e. * * *

2. Table 7-1-2 lists the text and graphical products available through FIS-B and provided free-of-charge. Detailed information concerning FIS-B meteorological products can be found in Advisory Circular 00-45, Aviation Weather Services, and AC 00-63, Use of Cockpit Displays of Digital Weather and Aeronautical Information. Information on Special Use Airspace (SUA), Temporary Flight Restriction (TFR) and Notice to Air Missions (NOTAM) products can be found in Chapters 3, 4 and 5 of this manual.

* * * * *

4. FIS-B products are updated and transmitted at specific intervals based primarily on product issuance criteria. Update intervals are defined as the rate at which the product data is available from the source for transmission. Transmission intervals are defined as the amount of time within which a new or updated product transmission must be completed and/or the rate or repetition interval at which the product is rebroadcast. Update and transmission intervals for each product are provided in Table 7-1-2.

TABLE 7–1–2

FIS-B OVER UAT PRODUCT UPDATE AND TRANSMISSION INTERVALS

* * * * *

5. Where applicable, FIS-B products include a look-ahead range expressed in nautical miles (NM) for three service domains: Airport Surface; Terminal Airspace; and En Route/Gulf-of-Mexico (GOMEX). Table 7-1-3 provides service domain availability and look-ahead ranging for each FIS-B product.

TABLE 7–1–3

PRODUCT PARAMETERS FOR LOW/MEDIUM/HIGH ALTITUDE TIER RADIOS

* * * * *

7–1–10 Weather Observing Programs

* * * * *

e. Table 7-1-4 contains a comparison of weather observing programs and the elements reported.

TABLE 7–1–4

WEATHER OBSERVING PROGRAMS

* * * * *

f. Service Standards. During 1995, a government/industry team worked to comprehensively reassess the requirements for surface observations at the nation's airports. That work resulted in agreement on a set of service standards, and the FAA and NWS ASOS sites to which the standards would apply. The term "Service Standards" refers to the level of detail in weather observation. The service standards consist of four different levels of service (A, B, C, and D) as described below. Specific observational elements included in each service level are listed in Table 7-1-5.

TABLE 7–1–5

* * * * *

7–1–12 ATC Inflight Weather Avoidance Assistance

* * * * *

b. * * *

1. * * *

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

* * * * *

7–1–13 Runway Visual Range (RVR)

* * * * *

f. Approach categories with the corresponding minimum RVR values. (See Table 7-1-6.)

TABLE 7–1–6

APPROACH CATEGORY/MINIMUM RVR TABLE

* * * * *

7–1–18 Pilot Weather Reports (PIREPs)

* * * * *

e. The FAA, NWS, and other organizations that enter PIREPs into the weather reporting system use the format listed in Table 7-1-7. Items 1 through 6 are included in all transmitted PIREPs along with one or more of items 7 through 13. Although the PIREP should be as complete and concise as possible, pilots should not be overly concerned with strict format or phraseology. The important thing is that the information is relayed so other pilots may benefit from your observation. If a portion of the report needs clarification, the ground station will request the information. Completed PIREPs will be transmitted to weather circuits as in the following examples:

TABLE 7–1–7

PIREP ELEMENT CODE CHART

* * * * *

7–1–20 Definitions of Inflight Icing Terms

See Table 7-1-8, Icing Types, and Table 7-1-9, Icing Conditions.

TABLE 7–1–8

ICING TYPES

* * * * *

TABLE 7–1–9

ICING CONDITIONS

* * * * *

7–1–21 PIREPs Relating to Turbulence

* * * * *

b. Duration and classification of intensity should be made using Table 7-1-10.

TABLE 7–1–10

TURBULENCE REPORTING CRITERIA TABLE

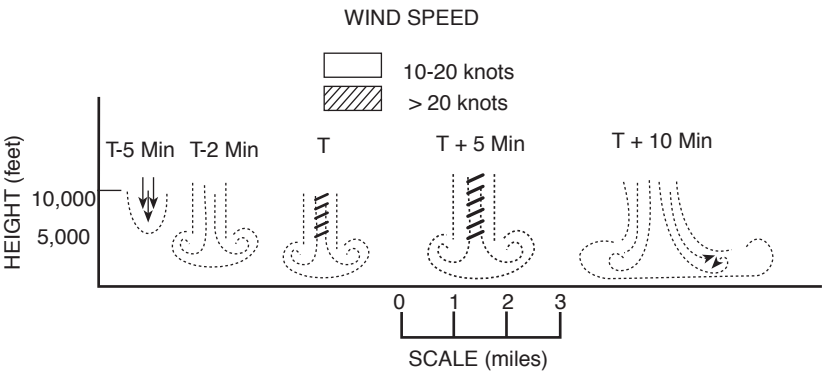
7–1–24 Microbursts

* * * * *

c. * * *

Figure 7-1-12, Evolution of a Microburst, was unintentionally omitted from ASA's 2022 FAR/AIM. The figure is shown below.

FIGURE 7–1–12
Evolution of a Microburst



Vertical cross section of the evolution of a microburst wind field. T is the time of initial divegence at the surface. The shading refers to the vector wind speeds. Figure adapted from Wilson et al., 1984, Microburst Wind Structure and Evaluation of Doppler Radar for Wind Shear Detection, DOT/FAA Report No. DOT/FAA/PM-84/29, National Technical Information Service, Springfield, VA 37 pp.

* * * * *

f. * * *

1. * * *

(a) The FAA currently employs an integrated plan for wind shear detection that will significantly improve both the safety and capacity of the majority of the airports currently served by the air carriers. This plan integrates several programs, such as the Integrated Terminal Weather System (ITWS), Terminal Doppler Weather Radar (TDWR), Weather Systems Processor (WSP), and Low Level Wind Shear Alert Systems (LLWAS) into a single strategic concept that significantly improves the aviation weather information in the terminal area. (See Figure 7-1-14.)

* * * * *

2. * * *

(b) LLWAS was fielded in 1988 at 110 airports across the nation. Many of these systems have been replaced by new TDWR and WSP technology. While all legacy LLWAS systems will eventually be phased out, 39 airports will be upgraded to LLWAS-NE (Network Expansion) system. The new LLWAS-NE systems not only provide the controller with wind shear warnings and alerts, including wind shear/microburst detection at the airport wind sensor location, but also provide the location of the hazards relative to the airport runway(s). It also has the flexibility and capability to grow with the airport as new runways are built. As many as 32 sensors, strategically located around the airport and in relationship to its runway configuration, can be accommodated by the LLWAS-NE network.

* * * * *

3. * * *

(a) TDWRs have been deployed at 45 locations across the U.S. Optimum locations for TDWRs are 8 to 12 miles off of the airport proper, and designed to look at the airspace around and over the airport to detect microbursts, gust fronts, wind shifts and precipitation intensities. TDWR products advise the controller of wind shear and microburst events impacting all runways and the areas 1/2 mile on either side of the extended centerline of the runways out to 3 miles on final approach and 2 miles out on departure.

* * * * *

4. Weather Systems Processor (WSP).

* * * * *

(c) This system is installed at 34 airports across the nation, substantially increasing the safety of flying.

5. * * *

(a) * * *

Reference: *FAA Order JO 7110.65, ¶3-1-8b2(a), Air Traffic Control, Low Level Wind Shear/Microburst Advisories.*

* * * * *

6. * * *

(c) * * *

TABLE 7–1–11
TWIP-EQUIPPED AIRPORTS

* * * * *

7–3–6 Examples for Calculating Altitude Corrections on CTAs

* * * * *

a. * * *

1. * * *

(a) * * *

(10) * * *

[b] LNAV MDA: 4520 + 150 = 4670 ft.

* * * * *

7–6–2 Reporting Radio/Radar Altimeter Anomalies

a. Background.

1. The radio altimeter (also known as radar altimeter or RADALT) is a safety-critical aircraft system used to determine an aircraft's height above terrain. It is the only sensor onboard the aircraft capable of providing a direct measurement of the clearance height above the terrain and obstacles. Information from radio altimeters is essential for flight operations as a main enabler of several safety-critical functions and systems on the aircraft. The receiver on the radio altimeter is highly accurate because it is extremely sensitive, making it susceptible to radio frequency interference (RFI). RFI in the C-band portion of the spectrum could impact the functions of the radio altimeter during any phase of flight—most critically during takeoff, approach, and landing phases. This could pose a serious risk to flight safety.

2. Installed radio altimeters normally supply critical height data to a wide range of automated safety systems, navigation systems, and cockpit displays. Harmful RFI affecting the radio altimeter can cause these safety and navigation systems to operate in unexpected ways and display erroneous information to the

pilot. RFI can interrupt, or significantly degrade, radio altimeter functions—precluding radio altimeter-based terrain alerts and low-visibility approach and landing operations. Systems of concern include Terrain Awareness Warning Systems (TAWS), Enhanced Ground Proximity Warning Systems (EGPWS), and Traffic Collision Avoidance Systems (TCAS), to name a few. Pilots of radio altimeter equipped aircraft should become familiar with the radio altimeter's interdependence with the other aircraft systems and expected failure modes and indications that may be associated with harmful interference.

b. Actions. Recognizing interference/anomalies in the radio altimeter can be difficult, as it may present as inoperative or erroneous data. Pilots need to monitor their automation, as well as their radio altimeters for discrepancies, and be prepared to take action. Pilots encountering radio altimeter interference/anomalies should transition to procedures that do not require the radio altimeter, and inform Air Traffic Control (ATC).

c. Inflight Reporting. Pilots should report any radio altimeter anomaly to ATC as soon as practical.

d. Post Flight Reporting.

1. Pilots are encouraged to submit detailed reports of radio altimeter interference/anomalies post flight as soon as practical, by internet via the Radio Altimeter Anomaly Reporting Form at **https://www.faa.gov/air_traffic/nas/RADALT_reports/**.

2. The post flight pilot reports of radio altimeter anomalies should contain as much of the following information as applicable:

(a) Date and time the anomaly was observed;

(b) Location of the aircraft at the time the anomaly started and ended (e.g., latitude, longitude or bearing/distance from a reference point or navigational aid);

(c) Magnetic heading;

(d) Altitude (MSL/AGL);

(e) Aircraft Type (make/model);

(f) Flight Number or Aircraft Registration

(g) Meteorological conditions;

(h) Type of radio altimeter in use (e.g., make/model/software series or version), if known;

(i) Event overview;

(j) Consequences/operational impact (e.g., impacted equipment, actions taken to mitigate the disruption and/or remedy provided by ATC, required post flight pilot and maintenance actions).

7–6–3 VFR in Congested Areas

* * * * *

7–6–4 Obstructions To Flight

a. General. Many structures exist that could significantly affect the safety of your flight when operating below 500 feet AGL, and particularly below 200 feet AGL. While 14 CFR §91.119 allows flight below 500 AGL when over sparsely populated areas or open water, such operations are very dangerous. At and below 200 feet AGL there are numerous power lines, antenna towers, etc., that are not marked and lighted as obstructions and; therefore, may not be seen in time to avoid a collision. Notices to Air Missions (NOTAMs) are issued on those lighted structures experiencing temporary light outages. However, some time may pass before the FAA is notified of these outages, and the NOTAM issued, thus pilot vigilance is imperative.

* * * * *

7–6–5 Avoid Flight Beneath Unmanned Balloons

* * * * *

7–6–6 Unmanned Aircraft Systems

* * * * *

7–6–7 Mountain Flying

* * * * *

7–6–8 Use of Runway Half-Way Signs at Unimproved Airports

* * * * *

7–6–9 Seaplane Safety

* * * * *

7–6–10 Flight Operations in Volcanic Ash

* * * * *

7–6–11 Emergency Airborne Inspection of Other Aircraft

* * * * *

7–6–12 Precipitation Static

* * * * *

7–6–13 Light Amplification by Stimulated Emission of Radiation (Laser) Operations and Reporting Illumination of Aircraft

* * * * *

g. * * *

Reference: *FAA Order JO 7110.65, ¶10-2-14, Unauthorized Laser Illumination of Aircraft. FAA Order JO 7210.3, ¶2-1-27, Reporting Unauthorized Laser Illumination of Aircraft.*

h. When these activities become known to the FAA, Notices to Air Missions (NOTAMs) are issued to inform the aviation community of the events. Pilots should consult NOTAMs or the Special Notices section of the Chart Supplement U.S. for information regarding these activities.

7–6–14 Flying in Flat Light, Brown Out Conditions, and White Out Conditions

* * * * *

7–6–15 Operations in Ground Icing Conditions

* * * * *

7–6–16 Avoid Flight in the Vicinity of Exhaust Plumes (Smoke Stacks and Cooling Towers)

* * * * *

7–6–17 Space Launch and Reentry Area

Locations where commercial space launch and/or reentry operations occur. Hazardous operations occur in space launch and reentry areas, and for pilot awareness, a rocket-shaped symbol is used to depict them on sectional aeronautical charts. These locations may have vertical launches from launch pads, horizontal launches from runways, and/or reentering vehicles coming back to land. Because of the wide range of hazards associated with space launch and reentry areas, pilots are expected to check NOTAMs for the specific area prior to flight to determine the location and lateral boundaries of the associated hazard area, and the active time. NOTAMs may include terms such as "rocket launch activity," "space launch," or "space reentry," depending upon the type of operation. Space launch and reentry areas are not established for amateur rocket operations conducted per 14 CFR Part 101.

FIGURE 7–6–3
Space Launch and Reentry Area Depicted on a Sectional Chart

Chapter 9

9–1–4 General Description of Each

a. * * *

1. Sectional Aeronautical Charts. Sectional Charts are designed for visual navigation of slow to medium speed aircraft. The topographic information consists of contour lines, shaded relief, drainage patterns, and an extensive selection of visual checkpoints and landmarks used for flight under VFR. Cultural features include cities and towns, roads, railroads, and other distinct landmarks. The aeronautical information includes visual and radio aids to navigation, airports, controlled airspace, special-use airspace, obstructions, and related data. Scale 1 inch = 6.86nm/1:500,000. 60 x 20 inches folded to 5 x 10 inches. Revised every 56 days. (See Figure 9-1-1 and Figure 9-1-2.)

2. VFR Terminal Area Charts (TAC). TACs depict the airspace designated as Class B airspace. While similar to sectional charts, TACs have more detail because the scale is larger. The TAC should be used by pilots intending to operate to or from airfields within or near Class B or Class C airspace. Areas with TAC coverage are indicated by a • on the Sectional Chart indexes. Scale 1 inch = 3.43nm/1:250,000. Revised every 56 days. (See Figure 9-1-1 and Figure 9-1-2.)

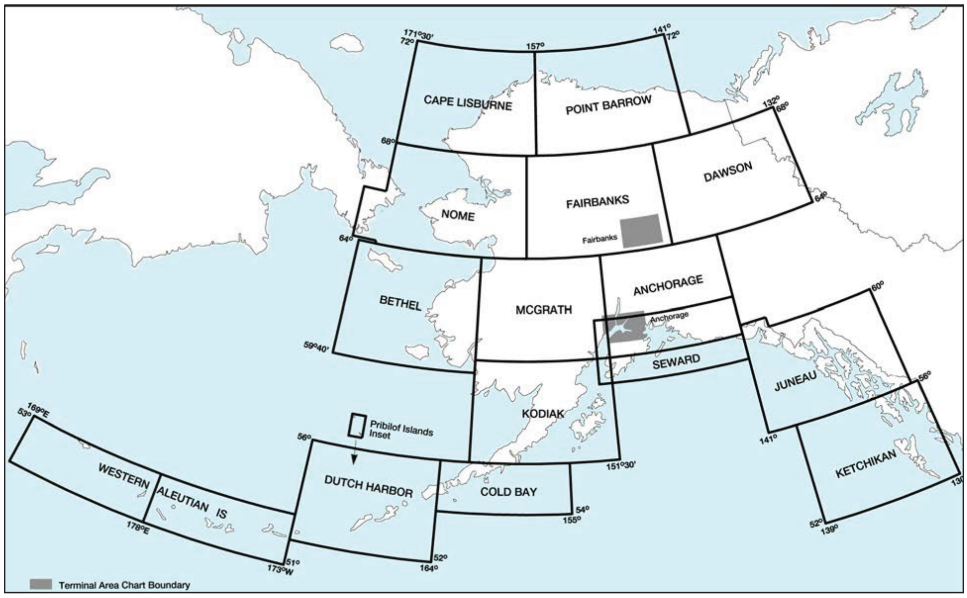
3. U.S. Gulf Coast VFR Aeronautical Chart. The Gulf Coast Chart is designed primarily for helicopter operation in the Gulf of Mexico area. Information depicted includes offshore mineral leasing areas and blocks, oil drilling platforms, and high density helicopter activity areas. Scale 1 inch = 13.7nm/1:1,000,000. 55 x 27 inches folded to 5 x 10 inches. Revised every 56 days.

4. Grand Canyon VFR Aeronautical Chart. Covers the Grand Canyon National Park area and is designed to promote aviation safety, flight free zones, and facilitate VFR navigation in this popular area. The chart contains aeronautical information for general aviation VFR pilots on one side and commercial VFR air tour operators on the other side. Revised every 56 days.

5. Caribbean VFR Aeronautical Charts. Caribbean 1 and 2 (CAC-1 and CAC-2) are designed for visual navigation to assist familiarization of foreign aeronautical and topographic information. The aeronautical information includes visual and radio aids to navigation, airports, controlled airspace, special-use airspace, obstructions, and related data. The topographic information consists of contour lines, shaded relief, drainage patterns, and a selection of landmarks used for flight under VFR. Cultural features include cities and towns, roads, railroads, and other distinct landmarks. Scale 1 inch = 13.7nm/1:1,000,000. CAC-1 consists of two sides measuring 30" x 60" each. CAC-2 consists of two sides measuring 20" x 60" each. Revised every 56 days. (See Figure 9-1-3.)

6. Helicopter Route Charts. A three-color chart series which shows current aeronautical information useful to helicopter pilots navigating in areas with high concentrations of helicopter activity. Information depicted includes helicopter routes, four classes of heliports with associated frequency and lighting capabilities, NAVAIDs, and obstructions. In addition, pictorial symbols, roads, and easily identified geographical features are portrayed. Scale 1 inch = 1.71 nm/1:125,000. 34 x 30 inches folded to 5 x 10 inches. Revised every 56 days. (See Figure 9-1-4.)

FIGURE 9–1–2
Sectional and VFR Terminal Area Charts for Alaska



* * * * *

c. * * *

2. Gulf of Mexico and Caribbean Planning Chart. This is a VFR planning chart on the reverse side of the *Puerto Rico–Virgin Islands VFR Terminal Area Chart*. Information shown includes mileage between airports of entry, a selection of special use airspace and a directory of airports with their available services. Scale 1 inch = 85nm/1:6,192,178. 60 x 20 inches folded to 5 x 10 inches. Revised every 56 days (See Figure 9-1-10.)

3. Alaska VFR Wall Planning Chart. This chart is designed for VFR preflight planning and chart selection. It includes aeronautical and topographic information of the state of Alaska. The aeronautical information includes public and military airports; radio aids to navigation; and Class B, Class C, TRSA and special-use airspace. The topographic information includes city tint, populated places, principal roads, and shaded relief. Scale 1 inch = 27.4nm/1:2,000,000. The one sided chart is 58.5 x 40.75 inches and is designed for wall mounting. Revised annually. (See Figure 9-1-9.)

4. U.S. VFR Wall Planning Chart. This chart is designed for VFR preflight planning and chart selection. It includes aeronautical and topographic information of the conterminous U.S. The aeronautical information includes airports, radio aids to navigation, Class B airspace and special use airspace. The topographic information includes city tint, populated places, principal roads, drainage patterns, and shaded relief. Scale 1 inch = 43nm/1:3,100,000. The one-sided chart is 59 x 36 inches and ships unfolded for wall mounting. Revised annually. (See Figure 9-1-11.)

* * * * *

e. * * *

3. digital-Visual Charts (d-VC). These digital VFR charts are geo-referenced images of FAA Sectional Aeronautical, TAC, and Helicopter Route charts. Additional digital data may easily be overlaid on the raster image using commonly available Geographic Information System software. Data such as weather, temporary flight restrictions, obstacles, or other geospatial data can be combined with d-VC data to support a variety of needs. The file resolution is 300 dots per inch and the data is 8-bit color. The data is provided as a GeoTIFF and distributed on DVD-R media and on the AIS website. The root mean square error of the transformation will not exceed two pixels. Digital-VCs are updated every 56 days and are available by subscription only.

* * * * *

Chapter 10

10–1–2 Helicopter Instrument Approaches

a. Instrument flight procedures (IFPs) permit helicopter operations to heliports and runways during periods of low ceilings and reduced visibility (e.g. approach/SID/STAR/en route). IFPs can be designed for both public and private heliports using FAA instrument criteria. The FAA does recognize there are non-FAA service providers with proprietary special criteria. Special IFPs are reviewed and approved by Flight Technologies and Procedures Division and may have specified aircraft performance or equipment requirements, special crew training, airport facility equipment, waivers from published standards, proprietary criteria and restricted access. Special IFPs are not published in the Federal Register or printed in government Flight Information Publications.

b. Helicopters are capable of flying any published IFPs, for which they are properly equipped, subject to the following limitations and conditions:

1. Helicopters flying conventional (i.e. non-Copter) IAPs may reduce the visibility minima to not less than one-half the published Category A landing visibility minima, or 1/4 statute mile visibility/1200 RVR, whichever is greater, unless the procedure is annotated with "**Visibility Reduction by Helicopters NA.**" This annotation means that there are penetrations of the final approach obstacle identification surface (OIS) and that the 14 CFR Section 97.3 visibility reduction rule does not apply and you must take precaution to avoid any obstacles in the visual segment. No reduction in MDA/DA is permitted at any time. The helicopter may initiate the final approach segment at speeds up to the upper limit of the highest approach category authorized by the procedure, but must be slowed to no more than 90 KIAS at the missed approach point (MAP) in order to apply the visibility reduction. Pilots are cautioned that such a decelerating approach may make early identification of wind shear on the approach path difficult or impossible. If required, use the Inoperative Components and Visual Aids Table provided inside the front cover of the U.S. Terminal Procedures Publication to derive the Category A minima before applying the 14 CFR Section 97.3 rule.

2. Helicopters flying Copter IAPs should use the published minima, with no reductions allowed. Unless otherwise specified on the instrument procedure chart, 90 KIAS is the maximum speed on the approach.

3. Pilots flying Area Navigation (RNAV) Copter IAPs should also limit their speed to 90 KIAS unless otherwise specified on the instrument procedure chart. The final and missed approach segment speeds must be limited to no more than 70 KIAS unless otherwise charted. Military RNAV Copter IAPs are limited to no more than 90 KIAS throughout the procedure. Use the published minima; no reductions allowed.

Note: *Obstruction clearance surfaces are based on the aircraft speed identified on the approach chart and have been designed on RNAV approaches for 70 knots unless otherwise indicated. If the helicopter is flown at higher speeds, it may fly outside of protected airspace. Some helicopters have a V_{MINI} greater than 70 knots; therefore, they cannot meet the 70 knot limitation to conduct these RNAV approaches. Some helicopter autopilots, when used in the "go-around" mode, are programmed with a V_{YI} greater than 70 knots. Therefore, those helicopters when using the autopilot "go-around" mode, cannot meet the 70 knot limitation for the RNAV approach. It may be possible to use the autopilot for the missed approach in other than the "go-around" mode and meet the 70 knot limitation. When operating at speeds other than V_{YI} or V_Y, performance data may not be available in the RFM to predict compliance with climb gradient requirements. Pilots may use observed performance in similar weight/altitude/temperature/speed conditions to evaluate the suitability of performance. Pilots are cautioned to monitor climb performance to ensure compliance with procedure requirements.*

Note: *V_{MINI}—Instrument flight minimum speed, utilized in complying with minimum limit speed requirements for instrument flight*
V_{YI}—Instrument climb speed, utilized instead of V_Y for compliance with the climb requirements for instrument flight
V_Y—Speed for best rate of climb

* * * * *

5. Even with weather conditions reported at or above minimums, under some combinations of reduced cockpit cutoff angle, approach/runway lighting, and high MDA/DH (coupled with a low visibility minima), the pilot may not be able to identify the required visual reference(s), or those references may only be visible in a

very small portion of the available field of view. Even if identified by the pilot, the visual references may not support normal maneuvering and normal rates of descent to landing. The effect of such a combination may be exacerbated by other conditions such as rain on the windshield, or incomplete windshield defogging coverage.

6. Pilots should always be prepared to execute a missed approach even though weather conditions may be reported at or above minimums.

* * * * *

TABLE 10–1–1
HELICOPTER USE OF STANDARD INSTRUMENT APPROACH PROCEDURES

Procedure	Helicopter Visibility Minima	Helicopter MDA/DA	Maximum Speed Limitations
Conventional (non-Copter)	The greater of: one half the Category A visibility minima, 1/4 statute mile visibility, or 1200 RVR	As published for Category A	The helicopter may initiate the final approach segment at speeds up to the upper limit of the highest approach category authorized by the procedure, but must be slowed to no more than 90 KIAS at the MAP in order to apply the visibility reduction.
Copter Procedure	As published	As published	90 KIAS maximum when on a published route/ track.
RNAV (GPS) Copter Procedure	As published	As published	The maximum speed for a Copter approach will be 90 KIAS or as published on the chart. Note: Higher approach angles may require a lower approach speed and aircraft V_{MINI}. Military procedures are limited to 90 KIAS for all segments.

Note: *Several factors affect the ability of the pilot to acquire and maintain the visual references specified in 14 CFR §91.175(c), even in cases where the flight visibility may be at the minimum derived from the criteria in Table 10-1-1. These factors include, but are not limited to:*

* * * * *

2. *Combinations of high MDA/DH and low visibility minimum, such as approaches with reduced helicopter visibility minima (per 14 CFR Section 97.3).*

3. *Type, configuration, and intensity of approach and runway/heliport lighting systems.*

* * * * *

10–1–3 Helicopter Approach Procedures to VFR Heliports

a. The FAA may develop helicopter instrument approaches for heliports that do not meet the design standards for an IFR heliport. The majority of IFR approaches to VFR heliports are developed in support of Helicopter Air Ambulance (HAA) operators. These approaches may require use of conventional NAVAIDS or a RNAV system (e.g., GPS). They may be developed either as a special approach (pilot training is required for special procedures due to their unique characteristics) or a public approach (no special training required). These instrument procedures may be designed to guide the helicopter to a specific landing area (Proceed Visually) or to a point-in-space with a "Proceed VFR" segment.

1. An approach to a specific landing area. This type of approach is aligned to a missed approach point from which a landing can be accomplished with a maximum course change of 30 degrees. The visual segment from the MAP to the landing area is evaluated for obstacle hazards. These procedures are annotated: "PROCEED VISUALLY FROM (named MAP) OR CONDUCT THE SPECIFIED MISSED APPROACH."

(a) "Proceed Visually" requires the pilot to acquire and maintain visual contact with the landing area at or prior to the MAP, or execute a missed approach. The visibility minimum is based on the distance from the MAP to the landing area, among other factors.

(b) The pilot is required to have the published minimum visibility throughout the visual segment flying the path described on the approach chart.

(c) Similar to an approach to a runway, the pilot is responsible for obstacle or terrain avoidance from the MAP to the landing area.

(d) Upon reaching the published MAP, or as soon as practicable thereafter, the pilot should advise ATC whether proceeding visually and canceling IFR or complying with the missed approach instructions. See paragraph 5-1-15, Canceling IFR Flight Plan.

(e) Where any necessary visual reference requirements are specified by the FAA, at least one of the following visual references for the intended heliport is visible and identifiable before the pilot may proceed visually:

* * * * *

(4) Heliport Approach Lighting System (HALS).

* * * * *

(6) Windsock or windsock light.

(7) Heliport beacon.

(8) Other facilities or systems approved by the Flight Technologies and Procedures Division (AFS-400).

2. Approach to a Point-in-Space (PinS). At locations where the MAP is located more than 2 SM from the landing area, or the path from the MAP to the landing area is populated with obstructions which require avoidance actions or requires turn greater than 30 degrees, a PinS Proceed VFR procedure may be developed. These approaches are annotated "PROCEED VFR FROM (named MAP) OR CONDUCT THE SPECIFIED MISSED APPROACH."

(a) These procedures require the pilot, at or prior to the MAP, to determine if the published minimum visibility, or the weather minimums required by the operating rule (e.g., Part 91, Part 135, etc.), or operations specifications (whichever is higher) is available to safely transition from IFR to VFR flight. If not, the pilot must execute a missed approach. For Part 135 operations, pilots may not

begin the instrument approach unless the latest weather report indicates that the weather conditions are at or above the authorized IFR minimums or the VFR weather minimums (as required by the class of airspace, operating rule and/or Operations Specifications) whichever is higher.

(b) Visual contact with the landing site is not required; however, the pilot must have the appropriate VFR weather minimums throughout the visual segment. The visibility is limited to no lower than that published in the procedure, until canceling IFR.

(c) IFR obstruction clearance areas are not applied to the VFR segment between the MAP and the landing site. Pilots are responsible for obstacle or terrain avoidance from the MAP to the landing area.

(d) Upon reaching the MAP defined on the approach procedure, or as soon as practicable thereafter, the pilot should advise ATC whether proceeding VFR and canceling IFR, or complying with the missed approach instructions. See paragraph 5-1-15, Canceling IFR Flight Plan.

* * * * *

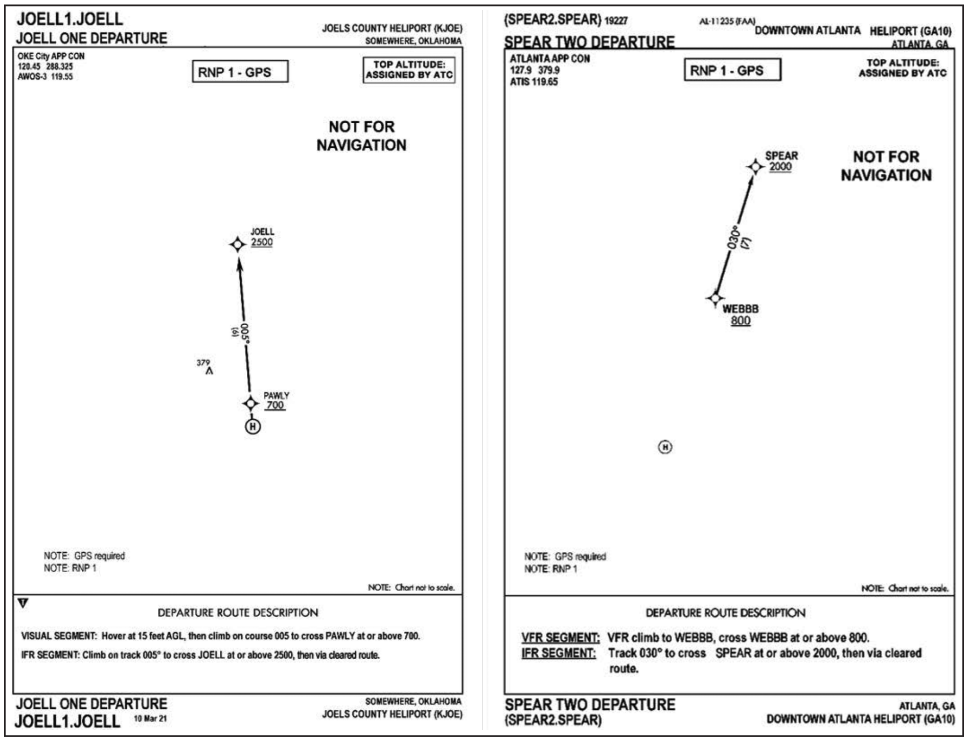
10–1–5 Departure Procedures

a. When departing from a location on a point-in-space (PinS) SID with a visual segment indicated and the departure instruction describes the visual segment the aircraft must cross the initial departure fix (IDF) outbound at-or-above the altitude depicted on the chart. The helicopter will initially establish a hover at or above the heliport crossing height (HCH) specified on the chart. The HCH specifies a minimum hover height to begin the climb to assist in avoiding obstacles. The helicopter will leave the departure location on the published outbound heading/course specified, climbing at least 400 ft/per NM (or as depicted on the chart), remaining clear of clouds, crossing at or above the IDF altitude specified, prior to proceeding outbound on the procedure. For example the chart may include these instructions: “Hover at 15 ft AGL, then climb on track 005, remaining clear of clouds, to cross PAWLY at or above 700.”

b. When flying a PinS SID procedure containing a segment with instructions to “proceed VFR,” the pilot must keep the aircraft clear of the clouds and cross the IDF outbound at or above the altitude depicted. Departure procedures that support multiple departure locations will have a Proceed VFR segment leading to the IDF. The chart will provide a bearing and distance to the IDF from the heliport. That bearing and distance are for pilot orientation purposes only and are not a required procedure track. The helicopter will leave the departure location via pilot navigation in order to align with the departure route and comply with the altitude specified at the IDF. For example, the chart may include these instructions: “VFR Climb to WEBBB, Cross WEBBB at or above 800.”

c. Once the aircraft reaches the IDF, the aircraft should proceed out the described route as specified on the chart, crossing each consecutive fix at or above the indicated altitude(s) until reaching the end of the departure or as directed by ATC.

FIGURE 10–1–1
Departure Charts



10–2–1 Offshore Helicopter Operations

* * * * *

e. * * *

1. * * *

(b) These and other operational hazards are currently minimized through timely dissemination of a written Notice to Air Missions (NOTAM) for pilots by helicopter companies and operators. A NOTAM provides a written description of the hazard, time and duration of occurrence, and other pertinent information. ANY POTENTIAL HAZARD should be communicated to helicopter operators or company aviation departments as early as possible to allow the NOTAM to be activated.

* * * * *

f. * * *

2. * * *

(a) * * *

(1) Notify company aviation departments, helicopter operators or bases, and nearby manned platforms of the pending perforation operation so the Notice to Air Missions (NOTAM) system can be activated for the perforation operation and the temporary helideck closure.

* * * * *

Appendix 3

Abbreviations/Acronyms

* * * * *

WSP	Weather Systems Processor

* * * * *

Appendix 4

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.

Note: *Additional information to assist with filing a flight plan using the international format can be found at http://www.faa.gov/ato?k=fpl.*

c. Flight Plan Contents

1. A flight plan will include information shown below:

(a) Flight Specific Information (Table 4-1)

(b) Aircraft Specific Information (Table 4-19)

(c) Flight Routing Information (Table 4-20)

(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.

TABLE 4–1
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.*

Note 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 Table 4-2. Codes allowed in Item 10b are shown in Table 4-3. Codes recognized in Item 18 NAV/, COM/, DAT/, and SUR/ are shown in Table 4-4. 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 Table 4-5.

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 Table 4-2 to indicate the serviceable COM/NAV/ approach aid equipment and capabilities available.

TABLE 4–2
ITEM 10A NAVIGATION, COMMUNICATION, AND APPROACH AID CAPABILITIES

A	GBAS Landing System
B	LPV (APV with SBAS)
C	LORAN C
D	DME
E1	FMC WPR ACARS
E2	D-FIS ACARS
E3	PDC ACARS
F	ADF
G	GNSS *(See Note 2)*
H	HF RTF
I	Inertial Navigation
J1	CPDLC ATN VDL Mode 2 *(See Note 3)*
J2	CPDLC FANS 1/A HFDL
J3	CPDLC FANS 1/A VDL Mode A
J4	CPDLC FANS 1/A Mode 2
J5	CPDLC FANS 1/A SATCOM (INMARSAT)
J6	Reserved
J7	CPDLC FANS 1/A SATCOM (Iridium)
K	MLS
L	ILS
M1	ATC SATVOICE (INMARSAT)
M2	Reserved
M3	ATC RTF (Iridium)
O	VOR
P1	CPDLC RCP 400 *(See Note 7)*
P2	CPDLC RCP 240 *(See Note 7)*
P3	SATVOICE RCP 400 *(See Note 7)*
P4–P9	Reserved for RCP
R	PBN Approved *(See Note 4)*
T	TACAN

U	UHF RTF
V	VHF RTF
W	RVSM Approved
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.*

Note 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*

Note 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.*

Note 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)*

Note 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.*

Note 6: *Information on navigation capability is provided to ATC for clearance and routing purposes.*

Note 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).*

TABLE 4–3
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.*
Note 2: *List additional surveillance equipment or capabilities in Item 18 following the indicator SUR/.*

TABLE 4–4
ITEM 18 NAV/, COM/, DAT/, AND SUR/ CAPABILITIES USED BY FAA

Item	Purpose	Entry	Explanation
NAV/ entries used by FAA	Qualify PBN for departure or arrival only	RNVD0E2A1	Indicates that flight is capable of RNAV 1 arrivals and RNAV 2 en route, but cannot fly an RNAV 1 departure.
		RNVD1E2A0	Indicates that flight is capable of RNAV 1 departures and RNAV 2 en route, but cannot fly an RNAV 1 arrival.
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	260B	Aircraft has 1090 MHz Extended Squitter ADS-B compliant with RTCA DO-260B (complies with FAA requirements)
		282B	Aircraft has 978 MHz UAT ADS-B compliant with RTCA DO-282B (complies with FAA requirements)

Note: *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.*

TABLE 4–5
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.*

Note 2: *Combinations of alphanumeric characters not included above are reserved.*

Note 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 installed and 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 Table 4-6.

• Indicate Area Navigation (RNAV) capability by filing one or more of the codes in Table 4-7.

TABLE 4–6
RADIO NAVIGATION CAPABILITIES

Capability	Item 10a	Item 18 NAV/
VOR	O	
DME	D	
TACAN	T	

TABLE 4–7
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

Note 2: *No PBN/ code needs to be filed to indicate the ability to fly point-to-point routes using GNSS or INS.*

Note 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)

• For domestic flights, it is not necessary to indicate Mode S capability. It is acceptable to simply file one of the following codes in Table 4-8.

TABLE 4–8
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 Table 4-9, if appropriate.

Note: *File only one transponder code.*

TABLE 4–9
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 Table 4-10. 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 Table 4-10).

TABLE 4–10
ADS-B CAPABILITIES

Capability	Item 10b	Item 18 SUR/
1090 ES Out Capability	B1	260B
1090 ES Out and In Capability	B2	260B
UAT Out Capability	U1	282B
UAT Out and In Capability	U2	282B

(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 Table 4-11)

TABLE 4–11
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 Table 4-12 in 10a are permissible.

• International flights may be required to indicate approach capability, based on instructions from relevant service providers.

TABLE 4–12
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 Table 4-13.

TABLE 4–13
FILING FOR PERFORMANCE BASED NAVIGATION (PBN) ROUTES

Type of Routing	Capability Required	Item 10a	Item 18 PBN/ See NOTE 4	Notes
RNAV SID or STAR (See NOTE 1)	RNAV 1	GR	D2	If GNSS
		DIR	D4	If DME/DME/IRU
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	RNAV Approach, GPS	GR	S1	*Domestic arrivals do not need to file PBN approach capabilities to request the approach.*
RNAV (GPS) Approach	RNAV Approach, GPS Baro-VNAV	GR	S2	
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 the flight plan can include the following entries in Item 18 NAV/:*

• Assign RNAV SID, but no RNAV STAR: NAV/RNVD1E2A0 (optionally, the A0 may be omitted)

• Assign RNAV STAR, but no RNAV SID: NAV/RNVD0E2A1 (optionally, the D0 may be omitted)

Note 2: *PBN code D1 includes the capabilities of D2, D3, and D4. PBN code B1 includes the capabilities of B2, B3, and B4. PBN code C1 includes the capabilities of C2, C3, and C4.*

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 Part 3, Section 2, "International Oceanic Airspace Notices" of the NOTAM book available at **http://www.faa.gov/air_traffic/publications/notices/**.

TABLE 4–14
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.*

TABLE 4–15
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

TABLE 4–16
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 J7	A1	N/A
Longitudinal	30 NM	ADS-C position report at least every 10 minutes	CPDLC	RNP4	D1	J5 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 J7	L1	N/A

TABLE 4–17
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 Item 10a	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 J7	L1	
Performance-based Longitudinal	5 Minutes	180	240	RNAV10 (RNP10) RNP4, or RNP2	RSP180	P2	J5 and/or J7	A1 or L1	RNP2 (See Note)
Performance-based Longitudinal	55.5 km 30 NM	180	240	RNP4 or RNP2	RSP180	P2	J5 and/or J7	L1	RNP2 (See Note)
Performance-based Longitudinal	93 km 50 NM	180	240	RNAV10 (RNP10) or RNP4,	RSP180	P2	J5 and/or J7	A1 or L1	

Note: *Filing of RNP2 alone is not supported in FAA controlled airspace; PBN/L1 (for RNP4) must be filed to obtain the indicated separation.*

10. Date of Flight (Item 18 DOF/)

Flights planned more than 23 hours 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 more than 23 hours prior to their 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 Table 4-18.

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.*

TABLE 4–18
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

TABLE 4–19
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 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 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*

TABLE 4–20
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 Z's (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 U.S. 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 Z's (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 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.*

Note 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 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.

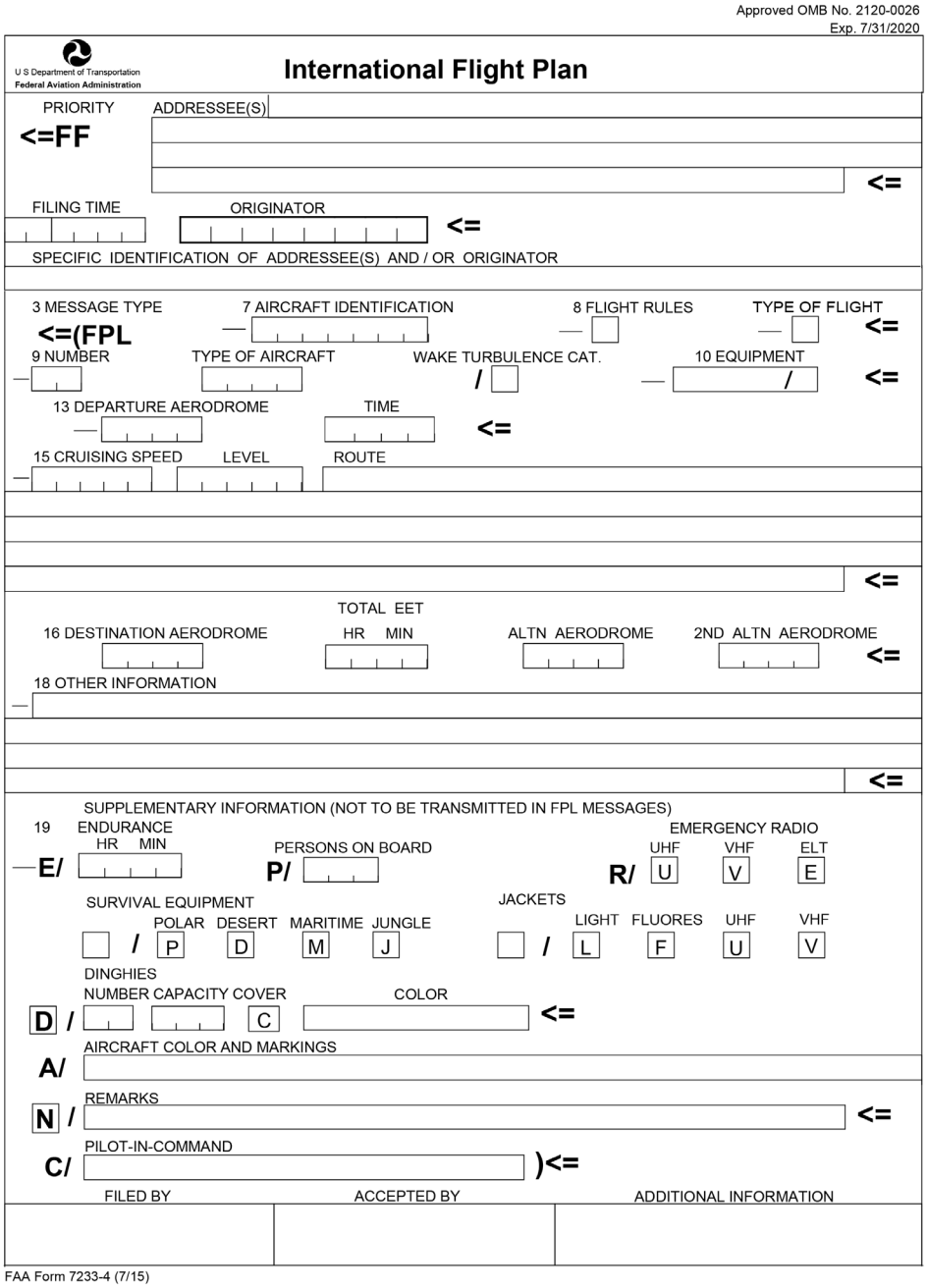
(g) A/ (Aircraft Color and Markings) Enter aircraft color(s).

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.

FAA FORM 7233–4, INTERNATIONAL FLIGHT PLAN



FAA Form 7233-4 (7/15)

FAA FORM 7233–4, INTERNATIONAL FLIGHT PLAN

Approved OMB No. 2120-0026
Exp. 7/31/2020

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 — N789AK

8 FLIGHT RULES — I

TYPE OF FLIGHT — G <=

9 NUMBER —

TYPE OF AIRCRAFT T B M 8

WAKE TURBULENCE CAT. / L

10 EQUIPMENT — SDGR /S <=

13 DEPARTURE AERODROME — K B O S

TIME 1700 <=

15 CRUISING SPEED — N0210

LEVEL F270

ROUTE LBSTA4 LBSTA DCT ENE J573 YSJ DCT <=

TOTAL EET

16 DESTINATION AERODROME C Y S J

HR MIN 0145

ALTN AERODROME ZZZZ

2ND ALTN AERODROME <=

18 OTHER INFORMATION

— PBN/A1B1C1 EET/CZQM0100 ALTN/CCW3 <=

SUPPLEMENTARY INFORMATION (NOT TO BE TRANSMITTED IN FPL MESSAGES)

19 ENDURANCE HR MIN E/ 0600

PERSONS ON BOARD P/ 005

EMERGENCY RADIO UHF U VHF V ELT X R/

SURVIVAL EQUIPMENT / POLAR X DESERT D MARITIME X JUNGLE J

JACKETS X / LIGHT X FLUORES F UHF U VHF V

DINGHIES

NUMBER 01 CAPACITY 010 COVER X COLOR ORANGE D / <=

AIRCRAFT COLOR AND MARKINGS A/ WHITE RED YELLOW

REMARKS N / SPOT GEN3 <=

PILOT-IN-COMMAND C/ W. MORIARTY 555-555-5555)<=

FILED BY	ACCEPTED BY	ADDITIONAL INFORMATION

FAA Form 7233-4 (7/15)

Appendix 5

FAA Form 7233-1—Flight Plan

Throughout this document where references are made to FAA Form 7233-1, Flight Plan, and FAA Form 7233-4, International Flight Plan, DOD use of the equivalent DOD Forms 175 and 1801 respectively, are implied and acceptable. Within U.S. controlled air space, FAA Form 7233-1, Flight Plan, may be used by filers of DOD/military flight plans and civilian stereo route flight plans. Use of the international format flight plan format is mandatory for:

a. 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.*

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 format.

Note: *The order of flight plan elements in FAA Form 7233-1 is equivalent to the DD-175.*

e. Explanation of IFR/VFR Flight Plan Items.

(1) Block 1. Check the type of flight plan.

(2) Block 2. Enter your complete aircraft identification.

(3) Block 3. Enter the aircraft type.

(4) Block 4. Enter the true airspeed (TAS).

(5) Block 5. Enter the departure airport identifier.

(6) Block 6. Enter the proposed departure time in Zulu (Z). If airborne, specify the actual or proposed departure time as appropriate.

(7) Block 7. Enter the appropriate altitude.

(8) Block 8. Define the route of flight by using NAVAID identifier codes and airways.

(9) Block 9. Enter the destination airport identifier code.

(10) Block 10. Enter the estimated time en route in hours and minutes.

(11) Block 11. Enter remarks, if necessary.

(12) Block 12. Specify the fuel on board in hours and minutes.

(13) Block 13. Specify an alternate airport if desired.

(14) Block 14. Enter name and contact information for pilot in command.

Note: *This information is essential in the event of search and rescue operations.*

(15) Block 15. Enter total number of persons on board (POB) including crew.

(16) Block 16. Enter the aircraft color.

FIGURE 5–1
FAA FORM 7233-1—FLIGHT PLAN (BLANK)
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).

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 current 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,completing and reviewing the collection of information. All responses to this collection of information are mandatory per14 CFR Part 91. Comments concerning the accuracy of this burden and suggestions for reducing the burden should be directed to the FAA at: 800 Independence Ave. SW, Washington, DC 20591, Attn: Information Collection Clearance Officer, ASP-110. Form Approved: OMB No. 2120-0026 Exp. 7/31/2023

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			KTS				
☐ IFR							
☐ DVFR							

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)

FIGURE 5–2
FAA FORM 7233-1—FLIGHT PLAN (SAMPLE)
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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Form Approved: OMB No. 2120-0026 Exp. 7/31/2023

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
✓ VFR / IFR / DVFR	G60683	UH60/A	0125 KTS	BGR	PROPOSED (Z): P1230	ACTUAL (Z):	VFR

8. ROUTE OF FLIGHT
2B7 AUG PWM CON

9. DESTINATION (Name of airport and city)	10. EST. TIME ENROUTE HOURS	MINUTES	11. REMARKS
CON	02	00	

12. FUEL ON BOARD HOURS	MINUTES	13. ALTERNATE AIRPORT(S)	14. PILOT'S NAME, ADDRESS & TELEPHONE NUMBER & AIRCRAFT HOME BASE	15. NUMBER ABOARD
03	00		G. BOWLBY 207-555-5555	5

17. DESTINATION CONTACT/TELEPHONE (OPTIONAL)
603-555-5555 BGR

16. COLOR OF AIRCRAFT
OLIVE DRAB

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

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