AIP

AERONAUTICAL INFORMATION PUBLICATION

UNITED STATES OF AMERICA

TWENTY–NINTH EDITION **DATED 22 JANUARY 2026**

AMENDMENT 1

9 JUL 2026

CONSULT NOTAM FOR LATEST INFORMATION

DEPARTMENT OF TRANSPORTATION

FEDERAL AVIATION ADMINISTRATION

AIP Amendment 1

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GEN 0.5 List of Hand Amendments to the AIP – Not applicable

GEN 0.6 Table of Contents to Part 1

CHAPTER 4	GENERAL PROVISIONS FOR AIR TRAFFIC SERVICES
4.2	In the U.S., flight information and alerting services are provided by ATC facilities, FSSs, and RCCs.
4.3.2.1.1	Transfer of control points vary depending on numerous factors.
4.3.2.1.3	Transfer of control varies.
4.3.2.1	Transfer of control points vary depending on numerous factors.
4.3.3.1	Transfer of control varies.
4.3.3.1a/ b	The U.S. does not “release” aircraft. Handoff is used.
4.4.1	In the U.S., flight information and alerting services are provided by ATC facilities, FSSs, and RCCs.
4.4.1.3	The U.S. uses a flight plan format different from the ICAO model discussed in Appendix 2. The U.S. ATS facilities will transmit ICAO repetitive flight plans (RPLs) even though a different format is used for stored flight plans.
4.4.2.1.1	The U.S. accepts flight plans up to 24 hours prior to Estimated Off –Block Time (EOBT).
4.5.6.2	U.S. ATS controllers do not normally include clearance for transonic acceleration in their ATC clearances.
4.5.7.3 and 4.10.4	In U.S. domestic airspace, transition altitude, layer, and level are not used. U.S. flight levels begin at FL180 where a barometric altimeter setting of 29.92 inches of mercury is used as the constant atmospheric pressure. Below FL 180, altitudes are based on barometric pressure readings. QNH and QFE altimeter settings are not provided in domestic U.S. airspace.
4.5.7.5	The flight crew shall read back to the air traffic controller safety-related parts of ATC clearances.
4.6.1.5	The U.S. allows speed adjustments to be assigned in 5 knot increments.
4.6.3.2	The U.S. uses different speed control phraseologies. Specifically, Doc 4444 uses “Maximum Speed” whereas the US uses “Maximum Forward Speed”. Doc 4444 uses “Minimum Clean Speed” whereas the US uses “Slowest Practical Speed.”
4.6.3.7	In the US, speed control is not to be assigned inside Final Approach Fix or 5 NM from runway end.
4.8.2	U.S. Controller phraseology differs slightly and does not include a time check.
4.8.3	ATS units are not required to advise a pilot who has canceled an IFR flight plan that IMC conditions are likely to be encountered along the route of flight; however, if a pilot informs a controller of a desire to change from **IFR** to VFR, the controller will request that the pilot contact the appropriate FSS.
4.9.1.1	FAA uses different wake turbulence categories and weight groups for wake turbulence separation minimums.
4.9.1.2	FAA uses different wake turbulence categories and weight groups for wake turbulence separation minimums. Not all FAA facilities are authorized to use the provisions of FAA JO 7110.126.
4.9.2	In the U.S., the word “heavy” is **used in all communications** with or about heavy jet aircraft in the terminal environment. In the en route environment, “heavy” is used in all communications with or about heavy jet aircraft with a terminal facility, when the en route center is providing approach control service, when the separation from a following aircraft may become less than five miles by approved procedure, and when issuing traffic advisories.
4.10.1.1, 4.10.1.2, 4.10.4.6	Flight levels (at or above 18,000msl, except oceanic) and in feet below 18,000 ft MSL, including around airports (vs. ICAO QFE – height above field/threshold when near airports).
4.11.2.2 4.11.3 d)	Reporting the assigned speed with each frequency change by pilots is not a requirement. Controllers are required to forward this information to the next controller.
4.11.1.1	The U.S. has different criteria to make position reports. FAA Order JO 7110.65, 5–1–8. Position Reporting.

4.11.1.3	After an aircraft receives the statement “radar contact” from ATC, it discontinues reporting over compulsory reporting points.
4.12.2 and 4.12.3	The U.S. does not normally use the term “air-report.” Pilot weather reports (PIREPs), position, and operational reports are used. PIREPs include reports of strong frontal activity, squall lines, thunderstorms, light to severe icing, wind shear and turbulence (including clear air turbulence) of moderate or greater intensity, volcanic eruptions and volcanic ash clouds, and other conditions pertinent to flight safety. They may include information on ceilings, visibility, thunderstorms, icing of light degree or greater, wind shear and its effect on airspeed, or volcanic ash clouds, but do not usually include air temperature.
4.13.4	The difference is the length of time for retention.
CHAPTER 5	**SEPARATION METHODS AND MINIMA**
5.2.1	In U.S. airspace, only conflict resolution (not separation) is provided between IFR and VFR operations. Separation is provided between IFR and Special VFR (SVFR) aircraft only within the lateral boundaries of Class B, C, D, or E control zones (the U.S. term is surface areas) below 10,000 feet MSL.
5.2.1.1	In U.S. Class A and B airspace, separation is provided for all aircraft. In U.S. Class C airspace, separation is provided between IFR and SVFR aircraft; conflict resolution is provided between IFR and VFR operations.
5.4.1.2.1.2	U.S. Lateral separation criteria and minima values differ somewhat.
5.4.2.2.1.1 c/ d	The U.S. uses 22 kt instead of 20 kt and 44 kt instead of 40 kt.
5.4.2.4.1	FAA uses Mach number technique for application of longitudinal separation with turbojet aircraft only.
5.4.2.5.1	FAA uses Mach number technique for application of longitudinal separation with turbojet aircraft only.
5.4.2.7.3.2 d)2).	The FAA’s Advanced Technologies and Oceanic Procedures (ATOP) automation platform is designed to ensure that separation will not decrease below required minima for same track aircraft should either the reference or maneuvering aircraft turn during the ITP. This allows the controller to issue a clearance to perform an ADS−B ITP climb/descent maneuver if required separation is maintained or increased and either the reference or maneuvering aircraft has a turn in its flight plan.
5.5.2	Whenever the other aircraft concerned are within 5 minutes flying time of the holding area.
5.6	U.S. Allows 2 minute separation standard when courses diverge within 5 minutes after departure.
5.7	U.S. Requires departing aircraft to be established on a course diverging by at least 45 degrees from the reciprocal of the final approach course.
5.8.2.1	FAA uses different wake turbulence categories and differing minima. FAA requires 3 minutes separation for a Large or Heavy aircraft landing behind a Super aircraft.
5.8.3.1	FAA uses different wake turbulence categories and differing minima. For Heavy, Large, or Small aircraft departing behind a Super aircraft, taking off from the same runway or a parallel runway separated by less than 2,500 feet, FAA requires that takeoff clearance may not be issued to following aircraft until 3 minutes after the preceding aircraft begins takeoff roll.
5.8.3.2	FAA Consolidated Wake Turbulence (CWT) is based on nine weight groups. FAA time-based wake turbulence separation minima differs from ICAO standards.
5.8.3.4	FAA Consolidated Wake Turbulence (CWT) is based on nine weight groups. FAA time-based wake turbulence separation minima differs from ICAO standards.

5.8.4.1	The U.S. includes B757 in heavy category for wake turbulence purposes. DOC 4444 does not stipulate. For Heavy, Large, or Small aircraft taking off behind a departing Super aircraft on an intersecting runway or nonintersecting runway if flight paths will cross; FAA requires 3 minutes wake turbulence separation.
5.8.4.2	FAA Consolidated Wake Turbulence (CWT) is based on nine weight groups. FAA time-based wake turbulence separation minima differs from ICAO standards.
5.8.4.3	FAA Consolidated Wake Turbulence (CWT) is based on nine weight groups. FAA time-based wake turbulence separation minima differs from ICAO standards.
5.8.5.2	FAA Consolidated Wake Turbulence (CWT) is based on nine weight groups. FAA time-based wake turbulence separation minima differs from ICAO standards.
5.9	In the U.S., pilot applied visual separation may be applied when other approved separation is assured before and after the application of visual separation, between aircraft up to but not including 18,000 feet. This may include in Class B and Class C airspace. There are no restrictions to daylight hours nor is it restricted to Classes D and E airspaces. The pilot is not required to request to maintain visual separation from another aircraft, nor is the pilot of the other aircraft required to agree to the use of visual separation.
CHAPTER 6	**SEPARATION IN THE VICINITY OF AERODROMES**
6.3.2.4	In the U.S.: a) An altitude to maintain is not normally issued in conjunction with a climb via clearance. If no altitude is assigned, pilots should climb to the "Top Altitude" depicted on the SID. ATC will assign an altitude when the "Top Altitude" is identified as "Assigned by ATC"; b) While on a climb via clearance, if a new clearance is issued to an altitude to maintain (for example, "Climb and maintain flight level one eight zero"), all published altitude restrictions on the SID are cancelled; c) A clearance to "climb via SID except maintain" cancels all remaining published altitudes on the SID that are above the cleared altitude; d) A clearance to "climb via SID except cross" instructs pilots to comply with the issued crossing restriction and all other restrictions on the SID; e) The phraseology "climb unrestricted" is not used. A climb and maintain (altitude) authorizes the pilot to climb unrestricted to the assigned altitude.
6.3.2.5	In the U.S., if the communications failure occurs in IFR conditions, or if VFR cannot be complied with, each pilot shall continue the flight according to the following requirements: Route a) By the route assigned in the last ATC clearance received; b) If being radar vectored, by the direct route from the point of failure to the fix, route, or airway specified in the vector clearance; c) In the absence of an assigned route, by the route that ATC has advised may be expected in a further clearance; or d) In the absence of an assigned route or a route that ATC has advised may be expected in a further clearance, by the route filed in the flight plan. Altitude - At the highest of the following altitudes or flight levels for the route segment being flown: a) The altitude or flight level assigned in the last ATC clearance received; b) The minimum altitude as prescribed in 14 CFR Part 91 (Section 91.121(c)) for IFR operations; or c) The altitude or flight level ATC has advised may be expected in a further clearance.
6.3.3.3	Arriving aircraft − delay of 10 minutes or more.

6.5.2.4	In the U.S.: a) A descend via clearance authorizes pilots to descend at pilot discretion to meet published restrictions on a STAR. Pilots are not authorized to descend without being issued an altitude; b) An altitude to maintain is not normally issued in conjunction with a descend via clearance. If no altitude is issued, the pilot is expected to descend to the lowest published altitude on the STAR; c) While on a descend via clearance, if a new clearance is issued to an altitude to maintain (for example, “Descend and maintain flight level two eight zero”), all published altitude restrictions on the STAR are cancelled; d) A clearance to “descend via STAR except maintain” cancels all remaining published altitudes on the STAR that are below the cleared altitude; e) A clearance to “descend via STAR except cross” instructs pilots to comply with the issued crossing restriction and all other restrictions on the STAR; f) The phraseology “descend unrestricted” is not used. A descend and maintain (altitude) authorizes the pilot to descend unrestricted to the assigned altitude.
6.5.3.1	The 7110.65 does not stipulate flight crew concurrence of Controller initiated Visual Approach.
6.5.3.5	U.S. requires ATC to inform following aircraft behind Heavy/B757 aircraft of manufacturer and model information.
6.5.5.2	Onward clearance time. 7110.65 PG EXPECT FURTHER CLEARANCE (TIME)- The time a pilot can expect to receive clearance beyond a clearance limit.
6.7.3.1.2	U.S. has no criteria for separate radar controllers in conducting Parallel approaches.
6.7.3.2.1 a) Table 6−1	When conducting Dual and Triple Simultaneous Independent Approaches using High Update Rate Surveillance, the FAA allows the minimum distance between runway centerlines to be 3100 feet.
6.7.3.2.4 c	The United States does not require the final vector to final to enable the aircraft to be established on the final approach course track, in level flight for at least 3.7 km (2.0NM) prior to intercepting the glide path or vertical path for the selected instrument approach procedure.
6.7.3.2.10	U.S. has no parallel approach obstacle assessment surfaces (PAOAS) Criteria.
6.7.3.2.10	The U.S. has no criteria for a “45 degree track”.
6.7.3.2.11 (a)	The U.S. has no criteria for both controllers to be advised when visual separation is applied.
6.7.3.4.1 (f)	The U.S. requires that adjacent missed approach procedures do not conflict.
6.7.3.6.3 (b)	The U.S. has no surveillance radar approach (SRA).
6.7.3.6.3 (c)	In the U.S., aircrews may execute visual approaches when the pilot has either the airport or the preceding aircraft in sight and is instructed to follow it. A contact approach is one wherein an aircraft on an IFR flight plan, having an air traffic control authorization, operating clear of clouds with at least 1 mile flight visibility and a reasonable expectation of continuing to the destination airport by visual reference in those conditions, may deviate from the instrument approach procedure and proceed to the destination airport by visual reference to the surface. This approach will only be authorized when requested by the pilot and the reported ground visibility at the destination airport is at least 1 statute mile.
CHAPTER 7	**PROCEDURES FOR AERODROME CONTROL SERVICE**
7.4.1.1	U.S. has no start up procedures, taxi clearance.
7.4.1.2.1 (f)	U.S. does not require time check prior to taxi.
7.6.3.1.1.3	In the U.S. the FAA does not publish standard taxi routes to be used at an airport in the national AIP.
7.6.3.2.3.2	In the U.S., for movements of other than aircraft traffic (i.e., vehicles, equipment, and personnel), steady green means cleared to cross, proceed, go; flashing green is not applicable; flashing white means return to starting point on airport; and alternating red and green means a general warning signal to exercise extreme caution.
7.6.3.2.3.3	U.S. controllers do not flash runway or taxiway lights to instruct aircraft to “vacate the runway and observe the tower for light signal.”

7.10.2	In the U.S., landing clearance to a succeeding aircraft in a landing sequence need not be withheld if the controller observes the positions of the aircraft and determines that prescribed runway separation will exist when the aircraft crosses the landing threshold. Controllers issue traffic information to the succeeding aircraft if it has not previously been reported.
7.10.3.1	U.S. Land and Hold Short Operations (LAHSO) include landing and holding short of an intersecting runway, taxiway, predetermined point, or approach/departure flight path.
7.11.4 and 7.11.6	U.S. category 1, 2, & 3 (SRS) aircraft weights differ. Separation standards are greater, due to increased size and weight categories.
7.13.1.1.2	U.S. does not specify separation standards on taxiways.
7.15	Special VFR operations may be conducted in the U.S. under the following weather minimums and requirements below 10,000 feet MSL within the airspace contained by the upward extension of the lateral boundaries of the controlled airspace designated to the surface for an airport. These minimums and requirements are found in 14 CFR Section 91.157. Special VFR operations may only be conducted: (1) With an ATC clearance; (2) Clear of clouds; (3) Except for helicopters, when flight visibility is at least 1 statute mile; and (4) Except for helicopters, between sunrise and sunset (or in Alaska, when the sun is 6 degrees or more below the horizon) unless: (i) The person being granted the ATC clearance meets the applicable requirements for instrument flight; and (ii) The aircraft is equipped as required in 14 CFR Sec. 91.205(d).
7.15	No person may take off or land an aircraft (other than a helicopter) under special VFR: (1) Unless ground visibility is at least 1 statute mile; or (2) If ground visibility is not reported, unless flight visibility is at least 1 statute mile.
CHAPTER 8	**ATS SURVEILLANCE SERVICES**
8.5.5.1	U.S. validation of mode C readouts allow up to 300 feet variance from pilot reported altitudes.
8.6.5.2	The U.S. has not implemented cold temperature corrections to the radar minimum vectoring altitude.
8.7.3.2 (b)	The U.S. only allows visual observance of runway turn-off points.
8.7.3.4	Separate a Heavy aircraft operating directly behind a Super aircraft or following a Super aircraft conducting an instrument approach by 6 miles unless the Super aircraft is operating above FL 240 and above 250 knots. Consider parallel runways less than 2,500 feet apart as a single runway because of the possible effects of wake
8.7.3.5	FAA Consolidated Wake Turbulence (CWT) is based on nine weight groups. FAA distance-based wake turbulence separation minima differs from ICAO standards.
8.7.3.6	Separate a Heavy aircraft operating directly behind a Super aircraft or following a Super aircraft conducting an instrument approach by 6 miles unless the Super aircraft is operating above FL 240 and above 250 knots. Consider parallel runways less than 2,500 feet apart as a single runway because of the possible effects of wake.

8.8.3.2	In the U.S., if the communications failure occurs in IFR conditions, or if VFR cannot be complied with, each pilot shall continue the flight according to the following requirements: Route a) By the route assigned in the last ATC clearance received; b) If being radar vectored, by the direct route from the point of failure to the fix, route, or airway specified in the vector clearance; c) In the absence of an assigned route, by the route that ATC has advised may be expected in a further clearance; or d) In the absence of an assigned route or a route that ATC has advised may be expected in a further clearance, by the route filed in the flight plan. Altitude − At the highest of the following altitudes or flight levels for the route segment being flown: a) The altitude or flight level assigned in the last ATC clearance received; b) The minimum altitude as prescribed in 14 CFR Part 91 (Section 91.121(c)) for IFR operations; or c) The altitude or flight level ATC has advised may be expected in a further clearance.
8.8.4.2	The U.S. does not specify that applicable separation can be utilized during emergency situations.
8.9.3.6	U.S. specifies maximum intercept angle of 30 degrees for fixed wing aircraft vectored to final approach course.
CHAPTER 9	**FLIGHT INFORMATION SERVICE AND ALERTING SERVICE**
9.1.3.2.1	ATC facilities in the CONUS will no longer receive AIRMET advisories to broadcast and will therefore not broadcast AIRMETs; operators have other methods, such as the G−AIRMET, of receiving AIRMET information over the CONUS.
9.1.3.7	The U.S. does not have special procedures for the transmission of information to supersonic aircraft.
9.1.4.1.1	Class F airspace is not used in the U.S. Traffic advisories are provided in Class C airspace and, workload permitting, in Class D, Class E, and Class G airspace.
9.2.1.2	The U.S. does not use “operations normal” or “QRU” messages. U.S. controllers are not normally familiar with the term “uncertainty phase.”
CHAPTER 10	**COORDINATION**
10.1.3.1	Except for a VFR aircraft practicing an instrument approach, an IFR approach clearance in the U.S. automatically authorizes the aircraft to execute the missed approach procedure depicted for the instrument approach being flown. No additional coordination is normally needed between the approach and en route controllers. Once an aircraft commences a missed approach, it may be radar vectored.
10.1.4.2.2	U.S. does not require ETA to be forwarded at least 15 minutes prior to ETA.
CHAPTER 11	**AIR TRAFFIC SERVICES MESSAGES**
11.1.2	U.S. uses different emergency messages. FAA Order JO 7110.10, Chapter 3, Emergency Services.
CHAPTER 12	**PHRASEOLOGIES**
12.2.7	US ATC does not allow conditional clearances described for example: “SAS 941, BEHIND DC9 ON SHORT FINAL, LINE UP BEHIND.” *Note − This implies the need for the aircraft receiving the conditional clearance to identify the aircraft or vehicle causing the conditional clearance.*

12.4.2.4.2 a) COMMENCE DESCENT NOW [TO MAINTAIN A (*number*) DEGREE GLIDE PATH]	The U.S uses only “begin descent” and does not speak to “Maintain a (number) Degree Glide Path.”
12.4.2.5.1 PAR APPROACH	U.S. controllers say “this will be a P-A-R/surveillance approach to runway (number) or airport/runway (number) or airport/heliport.” U.S. controllers do not say ”approach completed.” U.S. controllers say “your missed approach procedure is (missed approach procedure)” and, if needed, ”execute missed approach.” For PAR approaches, U.S. controllers say “begin descent” and for surveillance approaches, U.S. controllers say “descend to your minimum descent altitude.” 7110.65, Para 5-12-8. APPROACH GUIDANCE TERMINATION lights in sight and requested to or advised that he/she will proceed visually, and has been instructed to proceed visually, all PAR approach procedures shall be discontinued. d. Continue to monitor final approach and frequency. Pilots shall remain on final controller’s frequency until touchdown or otherwise instructed. 5-12-9. COMMUNICATION TRANSFER PHRASEOLOGY CONTACT (terminal control function) (frequency, if required) AFTER LANDING
12.4.2.4.4 CHECKS; (a)	U.S. uses “CHECK WHEELS DOWN”. 7110.65, Par 2-1-24. WHEELS DOWN CHECK PHRASEOLOGY
12.4.2.5.8 MISSED APPROACH a)	US ATC does not allow conditional clearances described.
12.4.3.12 and 12.4.3.13	U.S., for aircraft above FL 180, U.S. controllers would say, “confirm using two niner niner two as your altimeter setting, verify altitude” or “stop altitude squawk” “stop altitude squawk; altitude differs by (number) feet.” U.S. controllers would not say “stop squawk Charlie.” 7110.6, Para 5-2-22. BEACON TERMINATION Inform an aircraft when you want it to turn off its transponder.
12.3.4.13 - ENTERING AN AERODROME TRAFFIC CIRCUIT b)	U.S. uses PHRASEOLOGY: ENTER LEFT/RIGHT BASE. STRAIGHT-IN. MAKE STRAIGHT-IN. STRAIGHT-IN APPROVED. RIGHT TRAFFIC. MAKE RIGHT TRAFFIC. RIGHT TRAFFIC APPROVED. CONTINUE. b. Runway in use. c. Surface wind. d. Altimeter setting. REFERENCE FAA Order 7110.65, Current Settings, Para 2-7-1. e. Any supplementary information. f. Clearance to land. g. Requests for additional position reports. Use prominent geographical fixes which can be easily recognized from the air, preferably those depicted on sectional charts. This does not preclude the use of the legs of the traffic pattern as reporting points.
12.4.3.14	U.S. controllers would say “verify at (altitude)” and/or “verify assigned altitude.” 7110.65 Para, 5-2-17. 1. Issue the correct altimeter setting and confirm the pilot has accurately reported the altitude. PHRASEOLOGY- (Location) ALTIMETER (appropriate altimeter), VERIFY ALTITUDE.
12.6.1 Alerting phraseologies	U.S. controllers would issue MEA/MVA/MOCA/MIA instead of QNH. 7110.65.
CHAPTER 15	**PROCEDURES RELATED TO EMERGENICES, COMMUNICATION FAILURE AND CONTINGENCIES**
15.1.3 Unlawful interference and aircraft bomb threat	U.S. has difference updated. 5−2−13, Code Monitor Note 1. & 2. “10−2−6 HIJACKED AIRCRAFT 10−2−6. HIJACKED AIRCRAFT Hijack attempts or actual events are a matter of national security and require special handling. Policy and procedures for hijack situations are detailed in FAA Order JO 7610.4, Special Operations. FAA Order JO 7610.4 describes reporting requirements, air crew procedures, air traffic procedures and escort or interceptor procedures for hijack situations. REFERENCE: FAA Order JO 7610.4, Hijacked/Suspicious Aircraft Reporting and Procedures, Chapter 7. FAA Order 7110.65, Code Monitor, paragraph 5−2−13.

15.3.3 b) 1, 2	7110.65 defers to the AIM for what to expect an aircraft to do when loss of two-way communication has been encountered. The expectations in the AIM differ from what a pilot is expected to do in accordance with PANS-ATM 15.3.3 b) 1 and 2. The U.S. does not specify a time that an aircraft would maintain its last assigned heading, speed, or altitude. PANS-ATM uses 20 min. in a non-radar environment and 7 min. in a radar environment.
15.3.10	When neither communications nor radar contact can be established for 30 minutes (or prior, if appropriate), U.S. controllers will consider an aircraft overdue and will initiate overdue aircraft procedures including reporting to the ARTCC or FSS.
15.4.1	U.S. does not use the terms “strayed” or “unidentified” aircraft. 7110.65, paragraph 10-3-1. OVERDUE AIRCRAFT
15.5.3.2	Separate known aircraft from the aircraft dumping fuel as follows: a. IFR aircraft by one of the following: 1. *1,000 feet* above it; or in accordance with paragraph 4−5−1, Vertical Separation Minima, whichever is greater. 2. 2,000 feet below it. 3. 5 miles radar. 4. 5 miles laterally. b. VFR radar-identified aircraft by *5 miles* and in accordance with paragraph 5−6−1, Application.
15.7.1.1	The PANS-ATM states: “If, during an emergency situation, it is not possible to ensure that the applicable horizontal separation can be maintained, emergency separation of half the applicable vertical separation minimum may be used” Pilots must be advised that emergency separation is being applied and traffic information must be given. There is no equivalent emergency separation procedure in the U.S.
APPENDIX 1	**INSTRUCTIONS FOR AIR-REPORTING BY VOICE COMMUNICATIONS**
AIREP Form of Air-report	U.S. uses Pilot Reports (UAs), or Urgent Pilot Reports (UUAs).
APPENDIX 2	**FLIGHT PLAN**
ITEM 9	ICAO aircraft wake turbulence categories (heavy, medium, light) and FAA weight classes (heavy, large, small) differ. Also, for landing aircraft, wake turbulence separation is defined differently. The U.S. makes special provisions for any aircraft landing behind a B-757 (4 miles for a large aircraft behind or 5 miles for a small aircraft behind).
ITEM 15	U.S. ATS units do not accept cruising speeds nor filed altitudes/flight levels in metric terms. The U.S. accepts filed Mach Number expressed as M followed by 3 figures.
ITEM 18	The U.S. accepts the non-standard indicator IRMK/in filed flight plans.
APPENDIX 4	**AIR TRAFFIC INCIDENT REPORT**
Appendix 4	U.S. has their accident/incident report in FAA Order JO 8020.16C.
APPENDIX 5	**CONTROLLER−PILOT DATA LINK COMMUNICATIONS (CPDLC) MESSAGE SET**
6. Air traffic advisory message elements, Table A5−6−1. Air traffic advisory uplinks (ADVU)	PANS−ATM CPDLC message set includes the following: ADVU−1, Advisory providing the altimeter setting for the specified facility. (facility designation) ALTIMETER (altimeter setting). FAA JO 7110.65, AIM, and AIP CPDLC message set includes the following: UM169, (free text) ”(facility designation)” LOCAL ALTIMETER (for Altimeter reporting Station).

APPENDIX 6	**ATS INTERFACILITY DATA COMMUNICATIONS (AIDC) MESSAGES**
1. INTRODUC-TION 1.1 General	7110.65; 8-2-3. AIR TRAFFIC SERVICES INTERFACILITY DATA COMMUNICATIONS (AIDC) Where interfacility data communications capability has been implemented, its use for ATC co-ordination should be accomplished in accordance with regional Interface Control Documents, and supported by letters of agreement between the facilities concerned.

ANNEX 3 – METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION	
PART I (Core SARPs)	
Chapter 2	**General Provisions**
2.2	The U.S. has implemented a quality management system (QMS) for the majority of the meteorological information supplied to users. WAFC Washington and MWO Kansas City (a.k.a. Aviation Weather Center) are ISO 9000. MWOs Anchorage and Honolulu and all 122 Weather Forecast Offices have a QMS that is governed under the following National Weather Service (NWS) directives: NWS Instruction 10−1601 (Verification), NWS Instruction 10−1602 (Service Evaluation), NWS Instruction 10−1606 (Service Assessment), NWS Instruction 10−1607 (Office Evaluation), and NWS Instruction 10−815 (Aviation Meteorologist Training and Competencies). No QMS is in place for the augmentation of the surface observing program.
Chapter 3	**World Area Forecast System and Meteorological Offices**
3.2.1	SIGWX forecasts are not disseminated in IWXXM form (Appendix 2, 1.2.1.3).
Chapter 4	**Meteorological Observations and Reports**
4.5.1	For METAR and SPECI disseminated in accordance with Appendix 3, 2.1.2 PANS−MET Chapter 2, 2.1.1.2 (i.e., WMO's METAR and SPECI code form), the U.S. provides atmospheric pressure in inches of mercury. METAR and SPECI in WMO's METAR/SPECI code form contain an Altimeter Setting (A) instead of QNH, for example A3010, for 30.10 inches of mercury. The US does not provide QFE.
4.6.2.1	The U.S. reports visibility in statute miles.
4.6.3.3	RVR values in the METAR/SPECI code forms are reported in feet.
4.6.4.1	The U.S. automated surface observing systems (ASOS, AWOS) do not generate an automated report for the occurrence of drizzle or freezing drizzle. The ASOS does allow the manual augmentation of these elements to the observations.
4.6.8	The U.S. does not provide supplemental section for the METAR; the U.S. instead provides a Remarks Section (RMK) that contains similar information.
4.8	Volcanic eruptions, including known details, are contained in the "Remarks" section of manually reported METAR and SPECI.
4.9.2	The U.S. does not issue local routine reports or local special reports. This difference is applicable to subsequent paragraphs that relate to the provision of local routine and special reports in Annex 3 and the PANS−MET. The U.S. provides METAR to departing and arriving aircraft and provides wind and altimeter information in accordance with FAA Order JO 7110.65, Chapter 3, Section 9 (3−9−1) and Section 10 (3−10−1).
Chapter 5	**Aircraft observations and reports**
5.5	Urgent Pilot Reports (UUA) are used in lieu of Special Aircraft Observations, to include Hail, Low Level Wind Shear (within 2,000 ft of surface), severe icing, severe and extreme turbulence, tornado, funnel cloud or waterspout, and volcanic eruption and/or volcanic ash. In addition, Pilot Reports (UA) and UAA identify the location of the weather phenomenon by NAVAIDS. Pilot Reports are used in lieu of Special Aircraft Observations, to include moderate turbulence and moderate icing. Braking action may be included in the remarks section of the UUA/UA, but is reported to air traffic control when worse than reported.
Chapter 6	**Forecasts**
6.2.3	Takeoff forecast information is provided through the TAF.
6.3.1	Landing forecasts are provided by the TAF.
6.3.3	The U.S. does not provide trend forecasts.
6.5	The U.S. provides an Area Forecast (FA) and Graphical Forecast for Aviation (GFA) in place of a GAMET. The FA is provided by MWOs Anchorage and Honolulu while the GFA is provided by WFO Kansas City. The format and content of the FA and GFA differs from the GAMET. The FA and GFA are valid from the surface up to FL450. The GFA is a web−based interactive information service.
Chapter 7	**SIGMET and AIRMET Information, Aerodrome Warnings and Wind Shear Warnings**
7.1.3	The period of validity is 4-hour for volcanic ash SIGMETs issued by the MWO Kansas City over the contiguous U.S.

7.1.4	Volcanic ash SIGMETs issued by the MWO Kansas City over the contiguous U.S. are coordinated with the VAAC but are not based solely on the advisory information due to the period of validity.
7.1.6	Volcanic ash SIGMETs issued by the MWO Kansas City over the contiguous U.S. are updated every 4−hours.
7.2.1	The vertical domain of U.S. AIRMETs is from the surface up to FL450. The content, order, and format of U.S. AIRMETs are not in accordance with Table A6−1A due to national practices, which are described in National Weather Service Instruction 10−811. Traditional Alphanumeric Code AIRMETs are no longer in use over the contiguous U.S., but continue to be used over Alaska and Hawaii. The AIRMET sequence number is not restricted to FIRs. AIRMETs in the U.S. are issued on a routine schedule when moderate turbulence, non-convective low-level wind shear, strong surface winds greater than 30 knots, moderate icing, freezing level, mountain obscuration, or IFR conditions are occurring or are expected to occur. The US does not issue AIRMETs for thunderstorms. AIRMET information is not restricted to FL100 and below and can be provided up to FL450 depending on the phenomena. The U.S. does not use flight level (FL) when describing the altitudes in AIRMETs except for those above FL180. The U.S. uses VORs instead of latitude and longitude to describe the area within an AIRMET.
7.2.3	AIRMETs over the contiguous U.S. and Hawaii are valid for 6 hours and are issued every 6 hours on a scheduled basis. AIRMETs over Alaska are valid for 8 hours and are issued every 8 hours on a scheduled basis. The vertical domain of AIRMETs is from the surface up to FL450. The U.S. also provides a graphical version of the AIRMET (G−AIRMET) that contains 3−hourly time steps valid from 0−hour to 12−hours.
7.4.1	The U.S. does not provide wind shear warnings. The U.S. believes wind shear alerts are timelier to flight crews in landing and takeoff than wind shear warnings and thus provide a greater level of safety. In addition, the information is duplicative in nature in that wind shear warnings could be delayed while wind shear alerts are provided via automated systems that allow for immediate data link to flight crews through ATS systems.
7.6	The U.S. issues airport warning messages similar to the ICAO format (Appendix 7, Table A7−6, Template for aerodrome warnings) only at selected airports based on criteria per a bilateral agreement between the airport authority and the NWS Forecast Office.
Chapter 9	**Service for operators and flight crew members**
9.2.3 & 9.2.4	U.S. meteorological offices have no means to communicate directly to flight crews if there is a divergence in the forecast from what is provided in the flight document folder.
9.3.3	U.S. meteorological offices have no means to provide updates to flight document folders or to contact the operator.
Chapter 11	**Use of communications to exchange meteorological information**
11.6	The U.S. does not provide HF VOLMET service; MET information is instead supplied to aircraft in flight using ATOP and D−VOLMET through CPDLC.
PART II	**APPENDICES and ATTACHMENTS**
APPENDIX 2	**Technical specifications related to global systems, supporting centers and meteorological offices**
5.1.4	U.S. TCACs do not provide observed CB clouds in the tropical cyclone advisory (TCA) message. The U.S. does not provide a graphical version of the TCA.
APPENDIX 3	**Technical specifications related to meteorological observations and reports**
3.1.4	Practice to disseminate SPECI for improving conditions as soon as possible after the observation.
4.4.2.3	GR refers to all hail. All reports of hail include hailstone size diameter in the Remarks (RMK) section of the METAR/SPECI in increments of 1/4 inch. If no hail size is reported it will be assumed to be small hail. Small hail will result in the issuance of a SPECI. GS is used only when snow pellets are observed. The U.S. automated surface observing systems (ASOS, AWOS, AWSS) do not generate an automated report for the occurrence of drizzle or freezing drizzle. The ASOS and AWSS do allow the manual augmentation of these elements to the observations.
APPENDIX 4	**Technical specifications related to aircraft observations and reports**
3.1.3	The U.S. MWOs do not disseminate special air observations and reports.

APPENDIX 6	Technical specifications related to SIGMET and AIRMET information, aerodrome warnings and wind shear warnings and alerts
Table A6–1A, Template for SIGMET and AIRMET messages	The US does not provide SIGMET and AIRMET information in accordance with Table A6¿1A, template for SIGMET and AIRMET messages.
4.2	The U.S. issues convective SIGMETs in lieu of SIGMETs for thunderstorms over the CONUS. The US does not issue AIRMETs for thunderstorms. Convective SIGMETs are issued hourly for the East, Central, and Western U.S. and thus they do not indicate the FIR. Connective SIGMETs have an outlook section.
6.2.1	The U.S. does not provide wind shear warnings.

PANS−MET (DOC 10157)	AIR NAVIGATION SERVICES − METEOROLOGY
Chapter 2	**Aerodrome meteorological observational information**
2.1.1.1	The U.S. does not issue local routine reports or local special reports.
2.1.1.2	U.S. METARs and SPECIs are not issued in accordance with Appendix 2, Table A2−2 due to national practices, which are described in FAA Order JO−7900.5 and Federal Meteorological Handbook No. 1 (FMH*1). Ranges and resolution for numerical elements included in METAR and SPECI differ from Appendix 2, Table A2−4.
2.1.1.2 Note 2 d)	This field is also used to denote a correction to the METAR/SPECI by “COR”.
2.1.1.3	U.S. METAR and SPECI are produced in IWXXM but not disseminated.
2.1.1.4	The U.S. does not use the term CAVOK in meteorological reports.
2.1.2.1, 2.2.1.5.3, 2.2.2.4.2, 2.2.2.4.3, 2.2.3.6.4, 2.2.5.4.2, 2.2.5.4.5, 2.2.7.3.2	The U.S. does not issue local routine reports or local special reports.
2.1.2.2 a), b), c), d), e)	Practices require SPECI for wind shift when wind direction changes by 45 degrees or more in less than 15 minutes and the wind speed is 10 knots or more throughout the wind shift. Practices do not require SPECI for increases of mean surface wind speed. Practices require SPECI for squall, where squall is defined as a strong wind characterized by a sudden onset in which the wind speed increases at least 16 knots and is sustained at least 22 knots or more for at least one minute. Practices do not require SPECI for wind direction changes based on local criteria. SPECI are not prepared for the equivalents in feet of 150, 350, or 600 meters. United States military stations may not report a SPECI based on RVR. Practices do not require SPECI for the onset, cessation or change in intensity of: freezing fog; moderate or heavy rain (including showers thereof); low drifting dust, sand or snow; blowing dust, sand or snow (including snowstorm); dust storm; or sandstorm. SPECIs are made for the onset, cessation or change in intensity of snow, freezing precipitation, ice pellets, and the onset or cessation of hail, and thunderstorms. Practice provides a SPECI when a layer of clouds or obscurations aloft is present below 1000 ft and no layer aloft was reported below 1000 ft in the preceding report. A SPECI is also reported when the ceiling (ceiling is defined in the US as the lowest broken or overcast layer) decreases or increases at these markers: 3000, 1500, 1000, 500 ft or lowest published instrument approach procedures.
2.1.2.2.2 b)	U.S. practices require SPECI for visibility values of 1/4, 1/2, 1, 2, and 3 statue miles, and the lowest instrument approach procedure minimum as published in the U.S. Terminal Procedures (if different from the aforelisted).
2.1.2.2.2 c)	The U.S. does not issue SPECI for the equivalents in feet of 50, 175, 300, 550 or 600 meters. RVR is measured in increments of 100 feet up to 1,000 feet, increments of 200 feet from 1,000 feet to 3,000 feet, and increments of 500 feet above 3,000 feet to 6,000 feet. SPECI is made when the highest value from the designated RVR runway decreases to less than or if below, increases to equal or exceed 2,400 feet during the preceding 10 minutes.
2.1.2.2.2 d), e)	The U.S. does not issue SPECI for duststorm, sandstorm, low drifting dust, low drifting sand, low drifting snow, blowing dust, blowing sand, blowing snow, unless it has been determined to be critical by the observer or designated by the responsible agency.

2.2.1.1.2	The U.S. does not provide wind representatives for specific runways but does provide a wind representative for the aerodrome.
2.2.1.3.1	The U.S. provides a 2−minute average wind observation for the METAR/SPECI.
2.2.1.3.2	ASOS provides a 2−minute average wind that is updated every 5−seconds
2.2.1.5.2 b), c), d), e)	The wind direction may be considered variable if, during the 2−min evaluation period, the wind speed is 6 KT or less. Also, the wind direction shall be considered variable if, during the 2−min evaluation period, it varies by 60 deg or more when the wind speed is greater than 6 KT. Practices define wind gusts as rapid fluctuations in wind speed with a variation of 10 knots or more between peaks and lulls. Wind speed data for the most recent 10 minutes is examined and a gust, the maximum instantaneous wind speed during that 10−minute period, is reported if the definition above is met during that period. Wind speeds and gusts 100 kt or higher are reported as such and not limited to 99 KT.
2.2.2.4.1	For METAR and SPECI disseminated in accordance with 2.1.2 (i.e., WMO's METAR and SPECI code form), the U.S. reports visibility as follows: Automated observing stations: M 1/4 ("M" means less than), 1/4, 1/2, 3/4. 1, 1 1/4, 1 1/2, 1 3/4, 2, 2 1/2, 3, 4, 5, 6, 7, 8, 9, and 10 statute miles. Visibility of 1, 1/16 and 1/8 statute miles can be augmented at designated automated stations. Manual observing stations: 0, 1/16, 1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/8, 1 1/4, 1 3/8, 1 1/2, 1 5/8, 1 3/4, 1 7/8, 2, 2 1/4, 2 1/2, 2 3/4, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 20, 25, 30, and 35 statute miles. Further increments of 5 statute miles may be reported. For METAR and SPECI disseminated in accordance with 2.1.3 (i.e., IWXXM form), the above values are reported in meters except that when the visibility is greater than 6 statute miles it is reported as exceeding 10000 meters.
2.2.3.4 b) and Note	The U.S. does not report in METAR or SPECI marked discontinuity values when RVR passes through values of 800, 550, 300 and 175 meters.
2.2.3.6.1 and Appendix 2, Table A2−2, METAR and SPECI	For METAR and SPECI disseminated in accordance with 2.1.2 (i.e., WMO's METAR and SPECI code form), the U.S. reports RVR in increments of 100 feet up to 1,000 feet, increments of 200 feet from 1,000 feet to 3,000 feet, and increments of 500 feet above 3,000 feet to 6,000 feet. For METAR and SPECI disseminated in IWXXM form) the above values are reported in meters.
2.2.3.6.2	The U.S. reports RVR in increments of 100 feet up to 1,000 feet, increments of 200 feet from 1,000 feet to 3,000 feet, and increments of 500 feet above 3,000 feet to 6,000 feet.
2.2.3.6.6	RVR tendency is not reported in U.S. METAR and SPECI.

2.2.4.2.3 a), b), c), d)	The following weather elements are augmented manually at designated automated stations observation sites: FC, TS, GR, GS, and VA. At selected airports, additional present weather elements may be provided. With the exception of volcanic ash, present weather is reported when prevailing visibility is less than 7 statute miles or considered operationally significant. Volcanic ash is always reported when observed. GR refers to all hail. All reports of hail include hailstone size diameter in the Remarks (RMK) section of the METAR/SPECI in increments of 1/4 inch. If no hail size is reported it will be assumed to be small hail. Small hail will result in the issuance of a SPECI. GS is used only when snow pellets are observed. The U.S. automated surface observing systems (ASOS, AWOS, AWSS) do not generate an automated report for the occurrence of drizzle or freezing drizzle. The ASOS and AWSS do allow the manual augmentation of these elements, as well as ice crystals (IC), to the observations. Tornado and waterspout are coded as +FC. Mist (BR) is reported when visibilities are at least 5/8 statute mile but less than 7 statute miles.
2.2.4.2.5	Thunderstorms in surface observations are reported via the Automated Lightning Detection and Reporting System (ALDARS).
2.2.4.2.8	The practice with respect to the proximity indicator VC is between 5 to 10 statute miles from point of observation. The US does not define proximity by KM but rather uses English Units of statute miles.
2.2.4.2.10	The U.S. does not use "//" to denote the present weather is missing at an automated observing site. The U.S. uses "PWINO" in the remarks section of the METAR and SPECI to denote the present weather is unavailable. Per FMH−1, the U.S. only uses slashes (solidi) for missing precipitation totals in the METAR.
2.2.5.3	Practice does not provide adjustments for runway thresholds more than 50 feet lower than aerodrome elevation. Applies to KDEN runways 07, 08, 16L, 16R, 17L, 17R, 25, 26, 34L, 34R and 35R, KCLT runway 36C, KCVG runway 36C, KDFW runways 13L and 31R, KLAS runways 25L and 25R, KMEM runways 09 and 18C, KPIT runways 10R, 28L and 32, KSTL runways 06, 12R, 24 and 29, KIND runway 05L, KRDU runway 05L.

2.2.5.4	The U.S. reports cloud bases at or below 5,000 ft in steps of 100 ft, between 5,000 ft and 10,000 ft in steps of 500 ft, and greater than 10,000 ft in steps of 1,000 ft. The U.S. reports only up to 3 layers at automated sites and up to 6 layers at manual sites. Cloud layer amounts are a summation of layers at or below a given level, utilizing cumulative cloud amount. In addition, at automated sites, which are unstaffed, cloud layers above 12,000 ft are not reported. At staffed automated sites, clouds above 12,000 ft may be augmented. CAVOK and NSC are not used. In addition, the US does not use "///" when cloud type cannot be observed; "NCD" when no clouds are detected; or "//////" for CB or TCU when not detected by automated observing systems. In the US, the symbol "///", when used in the cloud section of METAR, refers to a mountain station where the layer is below the station level. The U.S. refers to a cloud Ceiling, with the abbreviation CIG, as the lowest layer reported as broken or overcast, or the vertical visibility into an indefinite ceiling. The U.S. refers to a Variable Ceiling in the METAR and SPECI Remarks (RMK) when the ceiling layer is variable and below 3,000 feet. The range of variability (V) between the two values is included in the Remark, for example "CIG 005V010". The U.S. does not use "///" to denote missing vertical visibility. The U.S. uses "CHINO", in the remarks section of the METAR, to denote that the Cloud Height Indicator system on the automated observation is unavailable. Per FMH−1, the U.S. only uses slashes (solidi) for missing precipitation totals in the METAR.
2.2.7.3.1	For METAR and SPECI disseminated in accordance with PANS−MET Chapter 2, 2.1.1.2 (i.e., WMO's METAR and SPECI code form), the U.S. provides atmospheric pressure in inches of mercury. METAR and SPECI in WMO's METAR/SPECI code form contains an Altimeter Setting (A) instead of QNH, for example A3010 for 30.10 inches of mercury. The US does not provide QFE.
2.2.7.3.3	For METAR and SPECI disseminated in accordance with PANS−MET Chapter 2, 2.1.1.2 (i.e., WMO's METAR and SPECI code form), the U.S. provides atmospheric pressure in inches of mercury. METAR and SPECI in WMO's METAR/SPECI code form contains an Altimeter Setting (A) instead of QNH, for example A3010 for 30.10 inches of mercury.
2.2.8	The U.S. does not provide supplemental section for the METAR rather the U.S provides a Remarks Section (RMK) that contains similar information. U.S. METAR and SPECI contain Remarks that are intended for all operational decision−making. FMH−1 contains the complete description of Remarks. Wind shear is not included in the METAR/SPECI code form in the U.S remarks. Practice is to not use RE and to use beginning and ending times in the remarks section for only recent precipitation and thunderstorms. Sea−surface temperature, the state of the sea and state of the runway are not provided in the METAR/SPECI code form in the U.S. remarks.
2.3	Volcanic eruptions, including known details, are contained in the "Remarks" section of manually reported METAR and SPECI.
Chapter 3	**Aircraft meteorological observational information**

Entire Chapter	As reported for Annex 3, Chapter 5, 5.5, Urgent Pilot Reports (UUA) are used in lieu of Special Aircraft observations, to include Hail (GR, GS), Low Level Wind Shear (within 2000ft of surface), severe icing, severe extreme turbulence, tornado, funnel cloud or water spout (FC), and volcanic eruption and/or volcanic ash. In addition, Route Pilot Reports (UA) and UUA identify the location of the weather phenomenon by NAVAIDS. Pilot Reports are used in lieu of Special Aircraft observations, to include moderate turbulence and moderate icing. Braking action may be included in the remarks section of the UUA/UA but is reported to air traffic control when worse than reported.
Chapter 4	**Aerodrome meteorological forecast information**
4.1.1.1	NWS TAFs are not issued in accordance with Appendix 4, Table A4*1 due to national practices, which are described in National Weather Service Instruction 10−813.
4.1.1.2	NWS TAFs are not issued in accordance with Appendix 4, Table A4*1 due to national practices, which are described in National Weather Service Instruction 10−813. U.S. METAR and SPECI are produced in IWXXM but not disseminated.
4.1.2.1	U.S. practices define light winds as less than or equal to 6 knots for using VRB in TAF.
4.1.2.2	For TAFs disseminated in accordance Chapter 4, 4.1.1.1 (i.e., WMO's TAF code form), forecast visibility increments used consist of 1/4 mile from 0 (zero) to 1 mile, 1/2 mile from 1 to 2 miles, and 1 mile above 2 miles. Note: miles are statute miles. For TAF disseminated in accordance with Chapter 4, 4.1.1.2 (i.e., IWXXM form), the visibility is given in meters.
4.1.2.3	Practices require forecast of non−convective low−level wind shear (LLWS) within 2,000 feet of the ground in the optional group. The forecast consists of WS (wind shear); heights of the wind shear in hundreds of feet; and wind speed and direction above the wind shear height.
4.1.2.4	The US does not use CAVOK and NSC in the TAF. US practices do not include TCU in the TAF.
4.1.3.1	US practices do not amend TAFs for moderate or heavy precipitation.
4.1.3.2	US practice requires TAF to be amended for a 30 degree change with an accompanying wind of 12 knots or greater; for a 10 knot wind increase only when the original was 12 knots or greater; and for a 10 knot wind gust, regardless of mean wind speed. Change groups and amendment criteria below 1/2 statute mile (800 meters) are not used. The 100−foot (30 meter) change group and amendment criterion are not used.
4.1.3.4	The US practice does not use the change indicator "BECMG".
4.1.3.5	The US practice is that the period of time covered by a TEMPO group is normally kept to a minimum but could be up to four (4) hours.
4.2	The U.S. does not issue landing forecasts in the form of a trend forecasts. Landing forecast information is provided through the TAF.
4.3	Takeoff forecast information is provided through the TAF.
Chapter 5	**En−route meteorological forecast information**
5.2	The U.S. provides an Area Forecast (FA) and Graphical Forecast for Aviation (GFA) in place of a GAMET. The format and content of the FA differs from the GAMET. The GFA are valid from the surface up to FL450. The GFA is a web−based interactive service.
Chapter 6	**Meteorological information containing advisories, alerts, warnings and notices**
6.1.2	One of two US VAACs are producing the advisory in IWXXM form, which is the Washington VAAC.
6.1.6	The VONA is not produced or disseminated in IWXXM form.
6.2.2	Tropical Cyclone Advisories issued by Miami and Honolulu TCACs differ from Table A7−3 in Appendix 7 of the PANS−MET as they contain forecasts valid at 3−, 9−, 15− 21− and 27−hours instead of 6−, 12−, 18−, and 24−hours.
6.2.3	The tropical cyclone advisory is produced in IWXXM but not disseminated.
6.3.3	Space weather advisories are not issued for communication via satellite (SATCOM).
6.4.1	The content and format of U.S. SIGMETs are not in accordance with Appendix 7, Table A7−4 due to national practices, which are described in National Weather Service (NWS) Instruction 10−811.

6.4.3	SIGMETs in the conterminous U.S. (CONUS), i.e. except Alaska and Hawaii, are often valid for more than one FIR. The SIGMET sequence numbers are not restricted to FIRs.
6.4.4	U.S. practices are to issue SIGMET for mountain wave only when accompanied by severe turbulence. The U.S. does not issue a SIGMETs for the following: −radioactive clouds −severe icing due to freezing rain. The U.S. issues SIGMETs for dust storm (WDSPR DS) and sandstorm (WDSPR SS) instead of heavy duststorm and heavy sandstorm. The U.S. criteria for the dust storm and sandstorm SIGMETs is dust or sand with visibility below 3 sm. The U.S. issues Convective SIGMETs in lieu of SIGMETs for thunderstorms over the 48 contiguous States (i.e., except Alaska and Hawaii). Convective SIGMETs are issued hourly for the East, Central, and Western U.S. and thus they do not indicate the FIR. Connective SIGMETs have an outlook section. Within the FIRs over the CONUS and coastal waters, Convective SIGMETs are issued in lieu of SIGMETS for Tropical Cyclones (TC). Within the CONUS and coastal waters, Convective SIGMETs are issued in lieu of SIGMETS for thunderstorms.
6.4.6	U.S. SIGMETs are produced in IWXXM but not disseminated.
6.5.1	The content, order and format of U.S. AIRMETs are not in accordance with Appendix 7, Table A7−5 due to national practices, which are described in National Weather Service Instruction 10−811.
6.5.2	The AIRMET sequence number is not restricted to FIRs. AIRMETs in the U.S. are issued on a routine schedule.
6.5.4	AIRMET information is not restricted to FL100 and below and can be provided up to FL450 depending on the phenomena. AIRMETs in the U.S. are issued on a routine schedule for the following criteria: 1. Ceiling less than 1,000 feet and/or visibility less than 3 SM (IFR). 2. Weather phenomena restricting visibility including, but not limited to, precipitation (PCPN), smoke (FU), haze (HZ), mist (BR), fog (FG), and blowing snow (BLSN). 3. Widespread mountain obscuration (MTNOBSC). 4. Weather phenomena causing the obscuration can include, and are limited to, clouds (CLDS), precipitation (PCPN), smoke (FU), haze (HZ), mist (BR), and fog (FG). 5. Moderate turbulence (MOD TURB). 6. Top and bottom of MOD TURB layer are included. 7. Sustained surface wind greater than 30 knots (STG SFC WND). 8. Moderate icing (MOD ICE). 9. Top and bottom of MOD ICE are included. 10. Multiple freezing level (FRZLVL) altitudes may be given; the lowest level is the declared FRZLVL. 11. Areas with multiple freezing levels are included. 12. Range of freezing levels over the area is included. 13. Lowest freezing levels above ground level (AGL) at intervals of 500 feet AMSL (or SFC as appropriate) are included. 14. Non−convective low−level wind shear potential below 2,000 feet AGL (LLWS POTENTIAL) The U.S. does not issue AIRMETs for the following: −Isolated and occasional thunderstorms −Cumulonimbus clouds −Towering cumulus clouds −Moderate mountain waves.

6.5.6	U.S. AIRMETs are produced in IWXXM but not disseminated.
6.7.2.1	The U.S. does not provide wind shear warnings. The U.S. believes wind shear alerts are timelier to flight crews in landing and takeoff than wind shear warnings and thus provide a greater level of safety. In addition, the information is duplicative in nature in that wind shear warnings could be delayed while wind shear alerts are provided via automated systems that allow for immediate data link to flight crews through ATS systems.
6.7.2.2	The U.S. does not provide wind shear warnings. The U.S. believes wind shear alerts are timelier to flight crews in landing and takeoff than wind shear warnings and thus provide a greater level of safety. In addition, the information is duplicative in nature in that wind shear warnings could be delayed while wind shear alerts are provided via automated systems that allow for immediate data link to flight crews through ATS systems.
Chapter 10	**Use of communications to exchange meteorological information**
10.4	The U.S. does not provide HF VOLMET service, rather MET information is supplied to aircraft in flight using ATOP and D−VOLMET through CPDLC.
Appendix 2	**Technical specifications related to aerodrome meteorological reports (local routine report, local special report, aerodrome routine meteorological report and aerodrome special meteorological report)**
Table A2−1	The U.S. does not issue local routine reports or local special reports.
Table A2−2	U.S. METARs and SPECIs are not issued in accordance with Appendix 2, Table A2−2 due to national practices, which are described in FAA Order JO−7900.5 and Federal Meteorological Handbook No. 1 (FMH*1).
Table A2−4	The U.S. does not issue local routine reports or local special reports.
Table A2−5	Ranges and resolution for numerical elements included in METAR and SPECI differ from Appendix 2, Table A2−5.
Appendix 3	**Technical specifications related to air−reports**
Table A3−1	The U.S. uses the formats of Urgent PIREPs (UUA) and Routine PIREPs (UA) to report airborne observations.
Table A3−2	The U.S. uses the formats of Urgent PIREPs (UUA) and Routine PIREPs (UA) to report airborne observations.
Table A3−3	The U.S. uses the formats of Urgent PIREPs (UUA) and Routine PIREPs (UA) to report airborne observations
Appendix 4	**Technical specifications related to aerodrome forecasts**
Table A4−1	NWS TAFs are not issued in accordance with Appendix 4, Table A4*1 due to national practices, which are described in National Weather Service Instruction 10−813.
Table A4−3	The US practice does not use the change indicator “BECMG”. The US practice is that the period of time covered by a TEMPO group is normally kept to a minimum but could be up to four (4) hours.
Appendix 6	**Technical specifications related to area forecasts for low−level flights in abbreviated plain language (GAMET)**
Table A6−1	The U.S. provides an Area Forecast (FA) and Graphical Forecast for Aviation (GFA) in place of a GAMET. The format and content of the FA differs from the GAMET.
Appendix 7	**Technical specifications related to meteorological information containing advisories, alerts, warnings (SIGMET, AIRMET) and notices**
Table A7−3	U.S. TCACs do not provide observed CB clouds in the tropical cyclone advisory message.

Table A7−5	The content and format of U.S. SIGMETs and AIRMETs are not in accordance with Appendix 7, Table A7−5. The U.S. does not use flight level (FL) when describing the altitudes in SIGMETs and AIRMETs except for those above FL180. SIGMETs are issued by alphanumeric series, e.g., Kilo 1,2,3 etc. The SIGMET and AIRMET sequence number are not restricted to FIRs. Convective SIGMETs for the CONUS are issued with the non*standard WMO Header designator "WST" and use a lower criteria. SIGMET messages in the CONUS use VORs in place of lat/long and do not reference FIRs. The U.S. does not include a specific forecast position for the end of the SIGMET validity time, other than TC and the VA outside of the of the CONUS.
Table A7−6	The U.S. issues airport warning messages similar to the ICAO format only at selected airports based on criteria per a bilateral agreement between the airport authority and the NWS Forecast Office.
Table A7−7	The U.S. does not provide wind shear warnings. The U.S. provides wind shear alerts, which the U.S. believes are timelier to flight crews in landing and takeoff than wind shear warnings and thus provide a greater level of safety.
Appendix 8	**Technical specifications for meteorological phenomena included in SIGMET and AIRMET information, special air−reports (uplink) and aerodrome warnings**
Appendix 8, 1	US practices allow for the use of term widespread (WDSPR) for more than 50 percent of the area. Convective SIGMET criteria over the contiguous US are: a. A line of thunderstorms at least 60 miles long with thunderstorms affecting at least 40 percent of its length. b. An area of active thunderstorms affecting judged to have a significant impact on the safety of aircraft operations covering at least 40 percent of the area concerned and exhibiting a very strong radar reflectivity intensity or a significant satellite or lightning signature. c. Embedded or severe thunderstorm(s) expected to occur for more than 30 minutes during the valid period regardless of the size of the area.
Appendix 8, 9	The U.S. issues SIGMETs for dust storm (WDSPR DS) and sandstorm (WDSPR SS) instead of heavy duststorm and heavy sandstorm. The U.S. criteria for the dust storm and sandstorm SIGMETs is dust or sand with visibility below 3 sm.

ANNEX 4 – AERONAUTICAL CHARTS	
Chapter 1	**Definitions**
Air taxiway	The U.S. does not depict defined surfaces for air−taxiing of helicopters.
Final approach and take−off area (FATO)	The U.S. does not depict final approach and take−off areas (FATOs).
Prohibited area Restricted area	The U.S. will employ the terms “prohibited area” and “restricted area” substantially in accordance with the definitions established and, additionally, will use the following terms: “Alert area.” Airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft. “Controlled firing area.” Airspace wherein activities are conducted under conditions so controlled as to eliminate the hazards to nonparticipating aircraft and to ensure the safety of persons and property on the ground. “Warning area.” Airspace which may contain hazards to nonparticipating aircraft in international airspace. “Maneuvering area.” This term is not used by the U.S. “Military operations area (MOA).” An MOA is an airspace assignment of defined vertical and lateral dimensions established outside Class A airspace to separate/segregate certain military activities from IFR traffic and to identify for VFR traffic where these activities are conducted. “Movement area.” Movement area is defined by the U.S. as the runways, taxiways, and other areas of an airport which are utilized for taxiing, take−off, and landing of aircraft, exclusive of loading ramp and parking areas.
Touchdown and lift−off area (TLOF)	The U.S. does not use this term.
Chapter 1.1	**Definitions**
Aerodrome reference point	Airport Reference Point is the approximate geometric center of all usable runway surfaces.
Area Minimum Altitude	Off Route Obstruction Clearance Altitude (OROCA) used.
Air Transit Route	Term “Helicopter Route” used.
Arrival Routes	Arrival routes are also identified on Standard Terminal Arrival (STAR).
Danger Area	The term “danger area” will not be used in reference to areas within the U.S. or in any of its possessions or territories.
Flight Level	Flight level is related to a reference datum of 29.92 inches of mercury.
Glide Path	Glideslope is used instead of glide path.
Helicopter Stand	Helipad is used vice helicopter stand.
Heliport reference point (HRP)	FAA definition: The geographic center of the heliport.
Minimum en−route altitude (MEA)	FAA definition: The lowest published altitude between radio fixes which assures acceptable navigational signal coverage and meets obstacle clearance requirements between those fixes.
Minimum obstacle clearance altitude (MOCA)	MOCA also assures acceptable navigational signal coverage within 22 NM of a VOR.

Minimum sector altitude (MSA)	The FAA refers to Minimum Sector Altitudes as Minimum Safe Altitudes.
Missed approach point	Missed approach point based on acquiring the required visual reference.
Movement Area	Movement area also includes areas used by helicopters in taxiing. It does not include loading ramps or parking areas.
Obstacle	Obstacles may include terrain and objects of natural growth.
Obstacle clearance altitude (OCA) or Obstacle clearance height (OCH)	Decision Altitude and Decision Height used vice Obstacle Clearance Altitude and Obstacle Clearance Height.
Terminal arrival altitude (TAA)	Terminal Arrival Areas defined by the extension of the IAF legs and the intermediate segment course.
Touchdown zone	Touchdown zone is the first 3000 feet of the runway beginning at the threshold.
Visual approach procedure	Visual approach procedure is conducted on an IFR flight plan which authorizes the pilot to proceed visually and clear of clouds to the airport.
Chapter 1.2	**Applicability**
1.2.2	Charts vary in their conformance to ICAO Standards.
1.2.2.1	Charts vary in their conformance to ICAO Recommended Practices.
Chapter 2	**General Specifications**
2.1.7	Charts are True North oriented except as indicated.
2.1.8	Sheet size of charts varies dependent on chart type.
2.13	Danger Areas do not exist in the U.S. Prohibited and Restricted airspace, Military Operations Areas, Warning Areas, Alert Areas, and National Security Areas exist and are charted.
2.2.1	The marginal note layouts, in some cases, differ from those set forth in Appendices 1, 5, and 6.
2.3.1	Marginal note layouts vary by chart type
2.4	Symbols do not universally conform to Appendix 2.
2.4.1	Symbols do not universally conform to Appendix 2.
2.4.4	Chart symbols may vary in their conformance to ICAO standards.
2.4.5	Chart symbols may vary in their conformance to ICAO standards.
2.5.4	Linear dimensions are expressed in feet.
2.5.7	Conversion scales are not universally used.
2.6.2	Some charts have no linear scale.
2.9.2	Abbreviations used are from FAA Order JO JO 7340.2, not ICAO Doc 8400.
2.11	Color schemes differ by chart series.
2.12.2	Hypsometric tints differ by chart series.
2.14.1	Airspace depiction differs by chart.
2.15.1	Depiction of magnetic variation differs by chart series and is not always shown.
2.15.4	Each aerodrome has its own magnetic variation assigned. IACC specifications require individually assigned magnetic variation values for each airport.
2.16	Chart typography may vary in conformance to ICAO Standards.
2.18.3.1	Julian Calendar is also used. Local times are used on select charts.
Chapter 3	**Aerodrome Obstacle Chart – ICAO Type A (Operating Limitations)**
3.1	This data is available digitally and is depicted on other individual flight products to which it is pertinent.

3.2.1	Availability of chart is not dependent on provision of other charts.
3.2.2	Notification is not made when chart is not required.
Chapter 4	**Aerodrome Obstacle Chart – ICAO Type B**
4.1	This data is available digitally and is depicted on other individual flight products to which it is pertinent.
4.2.1	Availability of chart is not dependent on provision of other charts.
Chapter 5	**Aerodrome Obstacle Chart – ICAO Type C**
5.1	This data is available digitally and is depicted on other individual flight products to which it is pertinent.
Chapter 6	**Precision Approach Terrain Chart – ICAO**
6.1	This data is available digitally and is depicted on other individual flight products to which it is pertinent.
Chapter 7	**En Route Chart – ICAO**
7.1	Simplified versions are not created.
7.6.1	Charts depict only oceanic shorelines and the major lake/river systems forming the U.S./Canadian border.
7.6.2	Off Route Obstruction Clearance Altitude (OROCA) is shown.
7.7	Isogonic date not charted. Isogonic data always reflects the most recent 5 year epoch date
7.9.2	Danger Areas do not exist in the U.S. Prohibited and Restricted airspace, Military Operations Areas, Warning Areas, Alert Areas, and National Security Areas exist and are charted.
7.9.3.1.1	Coordinates are shown in degrees, minutes and hundredths of minutes. SSV classification is now also shown for radio navigational aids. DME antenna elevation is not shown. Vertical limits of airspace are shown in tabulated data form. RNP values are not shown on routes. Coordinates of significant points are not shown. Bearings are shown to the nearest degree and distances to the nearest mile.
Chapter 8	**Area Chart – ICAO**
8.1	Area charts produced only where the amount of detail required results in congestion of information on an IFR Enroute Low Altitude chart.
8.3.1	Departure and Arrival routes are not shown.
8.6.1	Charts depict only oceanic shorelines and the major lake/river systems forming the U.S./Canadian border.
8.6.2	Obstacles are not shown.
8.7	Magnetic Variation is not shown unless an isogonic line runs through the area.
8.8.1	Bearings and tracks are not provided as True values. IACC specifications do not accommodate nor require True values.
8.8.2	Bearings and tracks are not provided as true values.
8.9.1	Only airports shown are those with hard surface runways of 3000 feet or longer and/or with an Instrument Approach Procedure.
8.9.2	Danger Areas do not exist in the U.S. Prohibited and Restricted airspace, Military Operations Areas, Warning Areas, Alert Areas, and National Security Areas exist and are charted.
8.9.3	Off Route Obstruction Clearance Altitude (OROCA) is shown.
8.9.4.1.1	Coordinates are shown in degrees, minutes and hundredths of minutes. Standard Service Volume (SSV) classification is shown for radio navigational aids. DME antenna elevation is not shown. Vertical limits of airspace are shown in tabulated data form. Terminal routings are not shown. Coordinates of significant points are not shown. Bearings are shown to the nearest degree and distances to the nearest mile. Minimum vectoring altitudes are not shown.
Chapter 9	**Standard Departure Chart – Instrument (SID) – ICAO**
9.2	Charts are provided only when a procedure has been established.
9.3.2	Charts are not generally drawn to scale.
9.3.3	Scale bar is not shown.

9.4.2	Parallels and meridians are not shown.
9.4.3	Graduation marks are not shown.
9.5	Procedure route is identified in accordance with FAA Order 8260.46
9.6.1	Culture and topography are not shown.
9.6.2	Contour relief is not shown. Obstacles are listed textually.
9.7	Magnetic variation is not shown.
9.8.1	Bearings and tracks are not provided as True values. IACC specifications do not accommodate nor require True values.
9.8.2	Bearings and tracks are not provided as True values.
9.8.3	Bearings, tracks, and radials are not provided as True/Grid values.
9.9.1.2	Any requested secondary airport shown by symbol vs runway pattern.
9.9.2	Danger Areas do not exist in the U.S. Prohibited and Restricted airspace, Military Operations Areas, Warning Areas, Alert Areas, and National Security Areas exist and are charted when requested by procedure developer.
9.9.3	The FAA refers to Minimum Sector Altitudes as Minimum Safe Altitudes
9.9.3.2	Area minimum altitudes are not shown.
9.9.4.1.1	Coordinates for NAVAIDs and Significant Points are shown in degrees, minutes and hundredths of minutes. Bearings are shown to the nearest degree and distances to the nearest mile. DME antenna elevation is not shown. Obstacles are depicted textually with position and height, and without regard for penetration of OIS. Minimum vectoring altitudes are not shown.
Chapter 10	**Standard Arrival Chart – Instrument (STAR) – ICAO**
10.2	Charts are provided only when a procedure has been established.
10.3.2	Charts are not generally drawn to scale.
10.3.3	Scale bar is not shown.
10.4.2	Parallels and meridians are not shown.
10.4.3	Graduation marks are not shown.
10.5	Procedure route is identified in accordance with FAA Order JO 7100.9
10.6.1	Culture and topography are not shown.
10.6.2	Contour relief is not shown. Obstacles are listed textually.
10.7	Magnetic variation is not shown.
10.8.1 10.8.2	Bearings and tracks are not provided as True values.
10.8.3	Bearings, tracks, and radials are not provided as True/Grid values.
10.9.1.1	Airports are shown by symbol vice pattern.
10.9.1.2	Airports are shown by symbol vs runway pattern.
10.9.2	Danger Areas do not exist in the U.S. Prohibited and Restricted airspace, Military Operations Areas, Warning Areas, Alert Areas, and National Security Areas exist and are charted when requested by procedure developer.
10.9.3.1	Minimum Sector Altitude is not shown.
10.9.3.2	Area minimum altitudes are not shown.
10.9.4.1.1	Bearings are shown to the nearest degree and distances to the nearest mile. Coordinates for NAVAIDs and Significant Points are shown in degrees, minutes and hundredths of minutes. DME antenna elevation is not shown. Minimum vectoring altitudes are not shown.
Chapter 11	**Instrument Approach Chart – ICAO**
11.3.3	Scale is not shown.
11.3.3.1	Distance circle is not shown.
11.3.3.2	Distance between components and between last component and runway shown.
11.4	Sheet size is 8.25 inches by 5.375 inches
11.5.2	Graduation marks are not shown.
11.7.1	Culture information is not shown. Shaded hydrographic features are shown, but not labeled.

11.7.2	Smoothed contour lines and spot elevations are not shown.
11.7.3	Terrain is not charted if Std 11.7.2 is not met.
11.8.1	Magnetic variation is shown only in areas of compass instability and on charts North of 67 degrees of latitude.
11.9.1	Bearings, tracks, and radials are not shown as true values for RNAV segments.
11.9.2	Only magnetic north values are shown.
11.9.3	Bearings, tracks, and radials are not provided in true/grid values.
11.10.1.1	Only airports specifically requested for charting are shown.
11.10.1.2	Only airports specifically requested for charting are shown.
11.10.2.2	Obstacles that are the determining factor for an OCA/OCH are not necessarily shown.
11.10.2.4	Obstacle heights are only shown in MSL.
11.10.2.7	Absence of obstacle free zones are not shown.
11.10.3	Danger Areas do not exist in the U.S. Prohibited and Restricted airspace, Military Operations Areas, Warning Areas, Alert Areas, and National Security Areas exist and are charted when requested by procedure developer.
11.10.4.3	Geographic final approach fix coordinates are not shown.
11.10.5	Minimum Safe Altitudes vice Minimum Sector Altitudes. Terminal Arrival Areas vice Terminal Arrival Altitude.
11.10.6.1	Arrowed dotted line is used for MA track. Arrowed dashed line used for Visual track. Times required for the procedure are not shown.
11.10.6.2	Distance to airport from final approach NAVAID is not shown.
11.10.6.3	Missed approach segment is shown by arrowed, dotted line. Arrowed, dashed line is used for visual segments. Times required for the procedure are not shown. Distance between components is shown vice a distance scale.
11.10.6.4	Parentheses are not shown.
11.10.6.5	Ground profile and shaded altitude blocks are not shown.
11.10.7.1	Procedure landing minima are shown vice aerodrome operating minima.
11.10.7.2	Decision Altitude/Height (DA/H) and Minimum Descent Altitude/Height (MDA/H) are shown vice OCA/H.
11.10.8.2	Altitude/height table is not shown.
11.10.8.3	Altitude/height table is not shown.
11.10.8.4	Rate of descent table is not shown on individual plates, but a combined climb/descent table is available digitally or with printed procedure publication.
11.10.8.5	Descent gradient not shown, threshold crossing height shown in feet, vertical descent angle shown to hundredths of a degree.
11.10.8.6	Threshold crossing height shown in feet. Descent angle shown to the nearest hundredth of a degree.
11.10.8.8	Cautionary note is dependent on multiple criteria.
11.10.8.9	Simultaneous operations notes do not always contain references to runways or procedures.
Chapter 12	**Visual Approach Chart – ICAO**
12.2	Chart provided only when visual approach procedure has been established.
12.3.2	The scale can vary and also be not–to–scale.
12.3.3	Charts are shown at scale of 1:250,000, IAPs at 1:500,000 or smaller.
12.4	Sheet size is 8.25 inches by 5.375 inches.
12.5.2	Graduation marks are not shown
12.8	Magnetic variation is shown only in areas of compass instability and on charts North of 67 degrees of latitude.
12.9.2	Bearings, tracks, and radials are not shown as true/grid values.
12.9.3	Grid meridian is not shown.

12.10.1.1	Only airports specifically requested for charting are shown.
12.10.1.2	Airport elevation is not shown.
12.10.2.3	Height of obstacle above Mean Sea Level is shown.
12.10.2.3.1	Datum height not shown. Parentheses are not shown.
12.10.3	Vertical limits of areas are not shown. Danger Areas do not exist in the U.S. Prohibited and Restricted airspace, Military Operations Areas, Warning Areas, Alert Areas, and National Security Areas exist and are charted when requested by procedure developer.
12.10.4	Control zones and Traffic zones are not shown.
12.10.5.3	VASI, MEHT, and angle of displacement are not shown.
Chapter 13	**Aerodrome/Heliport Chart – ICAO**
13.1	Helicopter movement is supported only with the location of helipads.
13.3.2	Latitude and longitude graticules are shown vice linear scale.
13.6.1	Latitude and longitude graticules are shown vice geographical coordinates. Airport elevations and runway end elevations are shown. Runway length and width are shown in feet. Clearways are not shown. Taxiways and identification only are shown. Standard taxi routes are not shown. Boundaries of air traffic service are not shown. RVR observation sites are not shown. VOR checkpoint and frequency are not shown.
13.6.2	Locations accommodating folding wings tips are not shown.
13.6.3	Helicopter pads only are shown. Touchdown and liftoff areas are not shown. Final approach and takeoff areas are not shown. Safety areas are not shown. Clearways are not shown. Only highest obstacle within parameters of chart is shown. Visual aids are not shown. Declared distances are not shown.
Chapter 14	**Aerodrome Ground Movement Chart – ICAO**
14.1	Chart is not produced.
Chapter 15	
15.1	Chart is not produced.
Chapter 16	**World Aeronautical Chart – ICAO 1:1 000 000**
16.2.1	1:1,000,000 Chart Series only produced and made available in areas NOT covered by 1:500,000 Chart Series. (Available in Caribbean area only.)
16.3.1	Linear scales are shown in the following order: nautical miles, statute miles, kilometers.
16.4.3	Charts are folded in eleven vertical panels and one horizontal fold.
16.5.1	Standard parallels are for each 8 degrees and are shown 1 degree and 20 minutes in from the Northern and Southern edges of the chart. Charts are not produced above 80 degrees latitude.
16.5.2	Distance between parallels is 1 degree. Above 56 degrees North, latitude graduation marks are shown only on every even degree of longitude. Distance between longitude meridians is 1 degree. Above 64 degrees North, meridian graduation marks are shown every 5 minutes.
16.5.3.1	Lengths of interval marks are as follow: 1 minute – .045 inches; 5 minutes – .065 inches; 10 minutes – .10 inches on both sides.
16.6	Chart numbering is indicated on Title Panel chart index.
16.7.2.2	Tunnels, if possible, are shown wherever they exist.
16.7.3.2	Roads are not shown within outlined populated areas.
16.7.9.2	Coordinates shown to the nearest minute.
16.7.10.1	Notes will read ‘Relief data incomplete’ or ‘Limits of reliable relief information.’
16.7.12.1	Wooded areas are not shown.
16.7.13	Date of topographic information is not shown.
16.8.2	Date of isogonic information is shown in the chart legend.
16.9.2.2	Other than hard surface runways are shown by symbol.
16.9.3.1	Obstacles greater than 500 feet are shown.
16.9.4	Danger Areas do not exist in the U.S. Prohibited and Restricted airspace, Military Operations Areas, Warning Areas, Alert Areas, and National Security Areas exist and are charted.

16.9.7.1	Only aeronautical ground lights that operate continuously are shown.
16.9.7.2	Only marine lights that operate year round, with a range of at least 10 NM, and are omnidirectional are shown.
Chapter 17	**Aeronautical Chart – ICAO 1:500 000**
17.3.1	Linear scales are shown in the following order: nautical miles, statute miles, kilometers.
17.4.3	Charts are folded in eleven vertical panels and one horizontal fold.
17.4.4	Relationship of chart to WAC series is not shown.
17.5.4.1	The 10 minute interval mark is .10 inches on both sides of the graticule line.
17.6.1.1	Relationship of chart to WAC series is not shown.
17.7.2.2	Tunnels, if possible, are shown wherever they exist. Prominent tunnels are shown pictorially.
17.7.3.1	Roads are shown for radar and visual value and for distinct configurations that provide visual checkpoint value.
17.7.9.2	Coordinates are shown to the nearest minute.
17.7.10.1	Notes will read ‘Relief data incomplete’ or ‘Limits of reliable relief information.’
17.7.12.1	Wooded areas are not shown.
17.7.13	Date of topographic information is not shown.
17.8.2	Date of isogonic information is shown in the chart legend.
17.9.2.2	Other than hard surface runways are shown by symbol.
17.9.3.1	Obstacles greater than 200 feet are shown, except in built up areas where only those greater than 300 feet are shown.
17.9.4	Danger Areas do not exist in the U.S. Prohibited and Restricted airspace, Military Operations Areas, Warning Areas, Alert Areas, and National Security Areas exist and are charted.
17.9.7.1	Only aeronautical ground lights that operate continuously are shown.
17.9.7.2	Only marine lights that operate year round, with a range of at least 10 NM, and are omnidirectional are shown.
Chapter 18	**Aeronautical Navigation Chart — ICAO Small Scale**
18.1	Chart is not produced.
Chapter 19	**Plotting Chart – ICAO**
19.1	Chart is not produced.
Chapter 20	**Electronic Aeronautical Chart Display — ICAO**
20.1	Charts provided digitally to operators. Digital charts mimic paper products described above and may not be modified.
Chapter 21	**ATC Surveillance Minimum Altitude Chart — ICAO**
21.1	Minimum Vectoring Altitude charts are available in electronic format only.
21.9.2	Danger Areas do not exist in the U.S. Prohibited and Restricted airspace, Military Operations Areas, Warning Areas, Alert Areas, and National Security Areas exist and are charted.
Appendix 6	**Aeronautical Data Quality Requirements**
Table 5. Bearing used for the formation of an en route and of a terminal fix	Whole degree resolution in charting of bearing used for formation of an en route and terminal fix.
Table 5. Bearing used for the formation of an instrument approach fix	Whole degree resolution in charting of bearing used for formation of an instrument approach procedure fix.

Table 6. (Length/ distance/ dimension Distance used for the formation of an en route fix	Whole NM resolution in charting of distance used for formation of an en route fix.
Table 6. (Length/ distance/ dimension Distance used for formation of an terminal and instrument approach procedure fix	Whole NM resolution in charting of distance used for formation of an Arrival or Departure fix.

DOC 10066, PANS–AIM	Procedures for Air Navigation Services Aeronautical Information Management
Chapter 1	**Definitions**
ASHTAM	The U.S. does not have a series of NOTAM called ASHTAM.
Danger Area	The FAA does not have Danger Area airspace within the U.S.
SNOWTAM	The U.S. does not use the SNOWTAM format.
Chapter 5	**Aeronautical Information Products and Services**
5.2.1.3.7	The FAA does not produce an AIP Supplement.
5.2.1.4	The FAA does not produce an AIP Supplement.
5.2.5	The U.S. Does not use SNOWTAM format.
5.2.5	The U.S. does not have a series of NOTAM called ASHTAM.
5.2.5	Currently, the U.S. does not utilize the ICAO format for Domestic NOTAMs. The U.S. NOTAMs that are distributed as International NOTAMs may be in ICAO format.
5.4.2	The FAA distribution system does not always match the ICAO standard for formatting, SNOWTAM, and ASHTAM.
Chapter 6	**Aeronautical Information Updates**
6.1.4	The FAA does not issue Trigger NOTAMs.
Appendix 2	**Content of the Aeronautical Information Publication (AIP)**
	PART 2 – EN (ENR)–ROUTE
ENR 5.1	U.S. does not use the term Danger Areas. The U.S. describes navigation warnings for Prohibited and Restricted airspace, Warning Areas, Military Operations Areas, Alert Areas, Controlled Firing Areas, and National Security Areas.
	PART 3 – AERODROMES (AD)
	AD 2. AERODROMES
AD 2.3	The U.S. AIP AD 2.3 specifies only the hours that the airport is attended. All other pertinent information for AD 2.3 is listed in the Airport/Facility Directory of the Chart Supplement, available on–line at: **https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dafd/**
AD 2.5	The U.S. AIP does not reference Passenger Facilities.
AD 2.6	The U.S. AIP 2.6 includes the Aerodrome Category for Firefighting and date of FAA certification. For availability of crash, fire, rescue equipment refer to the Airport/Facility Directory of the Chart Supplement, available on–line at: **https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dafd/**
AD 2.7	The U.S. AIP does not list AD 2.7 information. For airports with seasonal availability, that information will be included in the Airport Remarks of the Airport/Facility Directory of the Chart Supplement, available on–line at: **https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dafd/**
AD 2.8	The U.S. AIP does not list AD 2.8. The pertinent information for AD 2.8 may be found in the Airport/Facility Directory of the Chart Supplement, available on–line at: **https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dafd/**

AD 2.9	Types of runway lighting are shown with the runway or runway end they serve in the Airport/Facility Directory of the Chart Supplement, available on−line at: **https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dafd/** In the U.S. uniformity in airport markings and signs from one airport to another enhances safety and improves efficiency. Refer to AIP Aerodromes, AD 1.1 Aerodrome Availability, paragraphs 12 through 17 for FAA uniform aerodrome lighting information, marking aids and signs.
AD 2.10	The U.S. AIP does not contain AD 2.10, Aerodrome obstacles. Obstructions are shown on U.S. airport diagrams and SIDs, STARs and Instrument Approach Procedures, available at FAA Terminal Procedures: **https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dtpp/search/** For FAA standards for obstruction lighting refer to AIP Aerodromes, AD 1.1, Aerodrome availability, paragraph 15.3, Obstruction Lights.
AD 2.11	The U.S. AIP does not contain AD 2.11, Meteorological information provided. Weather data sources will be listed in the Airport/Facility Directory of the Chart Supplement, and will include assigned frequencies and/or telephone numbers and hours of operation. The Chart Supplement is available on−line at: **https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dafd/**
AD 2.15	The U.S. AIP does not contain AD 2.15, Other lighting and secondary power supply. Rotating beacon position is indicated on airport diagram. Rotating beacon operates sunset to sunrise unless otherwise indicated in the Airport Remarks section of the Airport/Facility Directory of the Chart Supplement. If a landing direction indicator is present its location will be indicated on the Airport Diagram. The airport's taxiway lighting is described in the Airport/Facility Directory of the Chart Supplement. The Chart Supplement is available on−line at: **https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dafd/**
AD 2.16	The U.S. AIP does not list Helicopter landing areas. Public heliports with an Instrument Approach Procedure (IAP) or requested by the FAA or DoD are depicted on the IFR Enroute Low Altitude Charts. If helicopter charts are available for an airport, this will be indicated in the Charts section of the Airport/Facility Directory of the Chart Supplement. The Chart Supplement is available on−line at: **https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dafd/** Helicopter Instrument Approach Procedures, when available, can be found at **Terminal Procedures – Basic Search (faa.gov)**.

AD 2.17	The U.S. AIP does not contain AD 2.17, Air traffic services airspace. Information concerning Class B, C, and part−time D and E surface area airspace is published with effective time in the Airport/Facility Directory of the Chart Supplement. The chart Supplement also lists the appropriate ATC unit and frequencies to be used. The Chart Supplement is available on−line at: **https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dafd/**
AD 2.20	The U.S. AIP does not contain AD 2.20, Local aerodrome regulations. This information is listed in the Airport Remarks section of the Airport/Facility Directory of the Chart Supplement, available on−line at: **https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dafd/**.
AD 2.21	The U.S. AIP does not contain AD 2.21, Noise abatement procedures. Noise Restrictions and Noise Abatement procedures are listed in the NOISE section of the Airport/Facility Directory of the Chart Supplement, available on−line at: **https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dafd/**
AD 2.22	The U.S. AIP does not contain AD 2.22, Flight procedures. Radar and ADS−B procedures are described in the Airport/Facility Directory of the Chart Supplement, available on−line at: **https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dafd/** When an aerodrome has established low visibility procedures a detailed description can be found online at; **https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afx/afs/afs400/afs410/cat_ils_info/media/App_SMGCS_Pub.xls**
AD 2.23	The U.S. AIP does not contain AD 2.23, Additional Information. Additional information at the aerodrome, such as an indication of bird concentrations to the extent practicable are described in the Airport Remarks section of the Airport/Facility Directory of the Chart Supplement, available on−line at: **https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dafd/**
AD 2.24	The U.S. AIP does not contain AD 2.24, Charts related to an aerodrome. U.S. charts equivalent to the recommended ICAO charts may be found online at **https://www.faa.gov/air_traffic/flight_info/aeronav/productcatalog/**

AD 2.25	The U.S. AIP does not contain AD 2.25, Visual segment surface (VSS) penetration. This information is depicted on Instrument Approach Procedures. If there are obstacles in the visual segment that could cause an aircraft to destabilize the approach between MDA and touchdown, the profile will not show a VDA (Vertical Descent Angle) and will instead show a note that states “Visual Segment−Obstacles”. On RNAV approach charts, a small, shaded arrowhead shaped symbol from the end of the VDA to the runway indicates that the 34:1 Obstacle Clearance Surface (OCS) for the visual segment is clear of obstacles. The absence of the symbol indicates that the 34:1 OCS is not clear, or a Visual Segment−Obstacles note is indicated on the chart. Instrument Approach Procedures are available at: **https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dtpp/search/**
	AD 3 HELIPORTS
	The U.S. AIP does not contain AD 3. HELIPORTS. All public and joint use heliports in the United States, Puerto Rico, Virgin Islands, and Pacific Territories are listed in the Digital Chart Supplements. The Digital Chart Supplement pages are available for viewing, searching, downloading, and printing at: **https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dafd/**
Appendix 3	**NOTAM Format**
Entire Appendix	Currently, the U.S. does not utilize the ICAO format for Domestic NOTAMs. The U.S. NOTAMs that are distributed as International NOTAMs may be in ICAO format.
Appendix 4	**SNOWTAM Format**
Entire Appendix	The U.S. does not use the SNOWTAM format.
Appendix 5	**ASHTAM Format**
Entire Appendix	The U.S. does not have a series of NOTAM called ASHTAM.
Appendix 7	**Predetermined Distribution System for NOTAM**
Entire Appendix	The FAA distribution system does not always match the ICAO standard for formatting, SNOWTAM, and ASHTAM.

ANNEX 5 – UNITS OF MEASUREMENT TO BE USED IN AIR–GROUND COMMUNICATIONS	
Chapter 3	**Standard application of units of measurement**
3.2.2 Table 3–3 Table 3–4	Table 3–4 Ref 1.12, runway length and Ref 1.13 runway visual range, unit of measure is in feet. Table 3–4 Ref 1.16, visibility unit of measure is statute miles (SM). Table 3–4 Ref 3.2, altimeter setting, unit of measure is reported as inches of mercury. Table 3–4, Ref 3.3, atmospheric pressure, unit of measure is in inches of mercury.
Attachment B	**Guidance on the application of System of Units (SI)**
5.4.2	Specifications differ from Attachment B, Style and usage, Para 5.4 Numbers. Comma is not acceptable as a decimal marker. Comma is used to separate digits in groups of three.

ANNEX 6 – OPERATION OF AIRCRAFT	
Part I	
Chapter 3	**General**
3.3.1	The U.S. Flight Operations Quality Assurance (FOQA) program is a voluntary program.
Chapter 4	**Flight Operations**
4.2.1.1	US regulations allow acceptance of air operator certificates (AOC) issued by a regional safety oversight organization (RSOO) for a State of the Operator who is a member of that RSOO. The RSOO and State of the Operator legislation, as well as the methods and processes used to delegate the tasks and functions for AOC, must be reviewed and found acceptable to the FAA.
Chapter 4 Reference 4.3.2	For multiengine aeroplanes, commuter and on−demand operators are required to maintain copies of the load manifest for 30 days. Part 121 air carriers are required to keep copies of the load manifest for 90 days
Chapter 4 Reference 4.3.4.1.2	When determining the distance to a take−off alternate, the United States does not require commuter and on demand operations to calculate engine inoperative configurations. However, it is required that the alternate must be within one−hour flying time (at normal cruising speed, in still air) of the aerodrome of departure.
Chapter 4 Reference 4.3.9.2	In the event of a loss of pressurization, the U.S. requires descent within four minutes to 14,000 ft, not the 13,000 ft as required by ICAO.
Chapter 4 Reference 4.9.2	The United States allows turbo−jets that are certificated for single pilot operations.
Chapter 5	**Aeroplane performance operating limitations**
Chapter 5 Reference 5.2.8.1	The United States does not have specific regulations that require the loss of Runway length be considered due to alignment of the airplane prior to takeoff. However, the United States does within its aircraft certification regulations require aircraft performance be determined by using the point on the runway where takeoff is started when computing takeoff distance. This same criteria is used when computing runway available for accelerate/stop distance. Accounting for runway loss due to alignment is done within each air carrier's approved operations manual.
Chapter 5 Reference 5.4.1	The U.S. does not require turbine engine reliability to have a power loss rate of less than 1 per 100,000 engine hours, a radio altimeter, two attitude indicators, airborne weather radar, a certified navigation system to identify aerodromes as forced landing areas, or an engine fire warning system.
Chapter 5 Reference 5.4.2	The U.S. does not require an automatic trend monitoring system on aeroplanes certificated after 1 January 2005.
Chapter 6	**Aeroplane instruments, equipment and flight documents**
6.3.2.3.2	Aircraft manufactured on or after May 16, 2025, and required to have a CVR installed must install a 25−hour CVR when operating under 14 CFR parts 121, 135, or 129 with a passenger seating capacity of 30 or more or an all−cargo or combi derivative of such an aircraft.
Chapter 6 Reference 6.4.1	The U.S. does not require a time piece.
Chapter 6 Reference 6.4.2	The United States does not require aeroplanes on VFR flights, when operated as controlled flights, to be equipped in accordance with the requirements for aeroplanes operated under instrument flight rules.
Chapter 6 Reference 6.5.1	Seaplanes are not required to have equipment for making the sound signals prescribed in the International Regulations for Preventing Collisions at Sea. Seaplanes are not required to be equipped with one sea anchor (drogue).

Chapter 6 Reference 6.5.3.1	The United States defines extended over water operations for aircraft other than helicopters as an operation over water at a horizontal distance of more than 50 nautical miles from the nearest shoreline. For 6.5.3.1.c – The United States does not require 8.8.kHz underwater locating devices to be installed on aircraft.
Chapter 6 Reference 6.12	The United States does not require equipment to measure cosmic radiation.
6.15.1	The United States requires all Part 121 turbine aircraft to be equipped with terrain avoidance equipment. However, 14 CFR Part 135 only defines that turbine aircraft with 10 or more passenger seats be equipped and is silent on the 5700 KG weight/take off mass requirement.
Chapter 6 Reference 6.15.5	The U.S. does not require ground proximity systems for piston powered airplanes.
6.17.2	The United States does not require an ELT for scheduled air carrier operations conducted by scheduled operators unless the scheduled operation is operated over water or remote areas. The United States only requires one ELT on flights over water or remote area.
6.17.3	The United States does not require an ELT for scheduled air carrier operations conducted by scheduled operators unless the scheduled operation is operated over water or remote areas. The United States only requires one ELT on flights over water or remote areas.
6.17.4	The United States does not require an ELT for scheduled air carrier operations conducted by scheduled operators unless the scheduled operation is operated over water or remote areas. The United States only requires one ELT on flights over water or remote areas.
6.17.5	The United States does not require an ELT for scheduled air carrier operations conducted by scheduled operators unless the scheduled operation is operated over water or remote areas. The United States only requires one ELT on flights over water or remote areas.
6.18.1	Existing regulations and surveillance capabilities deployed in the U.S. National Airspace System, including requirements for ADS–B Out equipment and use, provide precise, real–time position information to pilots and air traffic controllers. Additionally, FAA regulations require U.S. operators conducting international operations to comply with the rules there in force.
6.18.2	Existing regulations and surveillance capabilities deployed in the U.S. National Airspace System, including requirements for ADS–B Out equipment and use, provide precise, real–time position information to pilots and air traffic controllers. Additionally, FAA regulations require U.S. operators conducting international operations to comply with the rules there in force.
6.18.3	Existing regulations and surveillance capabilities deployed in the U.S. National Airspace System, including requirements for ADS–B Out equipment and use, provide precise, real–time position information to pilots and air traffic controllers. Additionally, FAA regulations require U.S. operators conducting international operations to comply with the rules there in force.
Chapter 6 Reference 6.20.2	The U.S. does not require pressure altitude information with a resolution of 25 feet or better.
Chapter 6 Reference 6.20.3	The U.S. does not require pressure altitude information with a resolution of 25 feet or better.
Chapter 6 Reference 6.21	The United States requires the use of boom (or mask) microphones below 18,000 ft which would be considered transition altitude. However, if the flight is conducted below 18,000 ft and is in the cruise phase of the flight, boom microphones may be removed. Certain 14 CFR part 135 operations that do not have cockpit voice recorder requirements are not required to wear boom microphones.

Chapter 6 Reference 6.23	When operations by a single pilot are authorized the U.S. requires an autopilot for IFR passenger operations, but not for VFR or cargo operations. A) The U.S. does not require a boom microphone. B) The U.S. requires charts be available and used.
Chapter 8	**Aeroplane Maintenance**
Chapter 8 Reference 8.4.2	The United States requires that records of work be retained until the work is repeated, superseded by other work or for one year after the work is performed, but does not require the records be retained after the unit has been permanently withdrawn from service.
Chapter 9	**Aeroplane flight crew**
Chapter 9 Reference 9.4.2.1	The cited regulation addresses recency and current requirements. Air operators have the discretion as to the extent the operator may qualify and keep current a cruise relief pilot above the regulatory requirement. In lieu of a pilot qualified and current as only a cruise relief pilot, a fully qualified and current SIC may serve as a cruise relief pilot.
Chapter 9 Reference 9.4.2.2	The U.S prescribes processes for variant cross training for flight crews related to variants. Air operators have the discretion as to what extent the operator may qualify and keep current a cruise relief pilot above the regulatory requirement.
Chapter 9 Reference 9.4.3.2	Operators are required to provide the information as outlined in this Standard and ensure the pilot as adequate knowledge of, and the ability to use this information.
Chapter 9 Reference 9.4.3.5	The U.S. does not restrict operators from using a pilot as a pilot−in−command on a route where the pilot has not, within the preceding 12 months, made at least one trip between the terminal points of that route as a pilot member of the flight crew, as a check pilot, or as an observer on the flight deck, except for special areas and airports. A list of U.S. Special airports may be found at the following link: https://drs.faa.gov/browse/excelExternalWindow/DRSDOCID1838872398202307071940180001 .
Chapter 9 Reference 9.4.3.6	The U.S. does not have an area/route 12 month currency requirement for pilots in command, except for special areas and airports.
Chapter 9 Reference 9.4.4.1	For PICs, the U.S. requires 1 proficiency checks per 12 months and either proficiency check or an approved simulator training course, for SICs, the U.S. requires 1 proficiency check each 24 months and another proficiency check or an approved simulator training course every 12 months.
PART II	
Section II	**General Aviation Operations**
Chapter 2.4	Aeroplane instruments, equipment and flight documents.
2.4.8	Airplanes operated under visual flight rules at night are not required to be equipped with: c) to f) a) a turn and slip indicator; b) an attitude indicator (artificial horizon); c) a heading indicator (directional gyroscope); d) a means of indicating whether the supply of power to the gyroscopic instruments is adequate; e) a sensitive pressure altimeter; f) a means of indicating the outside air temperature; g) a timepiece with a sweep second hand; h) an airspeed indicating system with a means of preventing malfunctioning due to condensation or icing; i) a rate−of−climb and descent indicator; j) a landing light; k) illumination for flight instruments and equipment; l) lights in passenger compartments; and m) a flashlight (electric torch) for each crew member station.
Chapter 2.5	Aeroplane Communication, Navigation and Surveillance Equipment
2.5.1.1	Except when operating under controlled flight, airplanes operated at night are not required to have radio communications equipment capable of conducting two-way communications. United States requirements for radio communications equipment are based upon the type of airspace in which the operation occurs, and not on the time of the day.
2.5.1.2	When more than one radio communications equipment unit is required, the United States has no provision that each unit be independent of any other.

2.5.1.4	Except when operating under controlled flight, airplanes on extended flights over water or on flights over underdeveloped land are not required to have radio communications equipment capable of conducting two-way communications.
2.5.2.1	The United States has no provisions concerning required aircraft navigation instruments enabling a flight to proceed in accordance with a flight plan, prescribed RNP types, or the air traffic services provided. The United States does not specify a minimum distance between landmark references used by flights operating under visual flight rules.
Chapter 2.6	**Aeroplane Maintenance**
2.6.2.2.	The FAA established Title 14 Code of Federal Regulations section 43.10, which speaks to the disposition of parts, removed from type-certificated products. After April 15, 2002, each person who removes a life-limited part from a type certificated product must ensure that the part is controlled using: a record keeping system; tag or record attached to part; non-permanent marking; permanent marking; or segregation.
Chapter 2.8	Manuals, logs and records
2.8.2.1	The FAA doesn't require a journey logbook for General Aviation operations.
2.8.3	The FAA doesn't require pilots for General Aviation operations to carry a list of emergency equipment. The list of required flying equipment and operating information is available in 14 CFR § 91.503.
Appendix 2.4	**General aviation specific approvals**
2. SPECIFIC APROVAL TEMPLATE	The FAA monitors RVSM performance on a continual basis via ADS–B.
Section III	**Large and Turbojet Aeroplanes**
Chapter 3.1	**Applicability**
3.1.1	Large aircraft means aircraft of more than 12,500 pounds, maximum certificated takeoff weight. Additionally, 14 CFR part 91 requirements for non–commercial general aviation operations apply to large and turbojet airplanes with additional specific requirements established 14 CFR part 91 subparts F and G.
3.1.2	Large aircraft means aircraft of more than 12,500 pounds, maximum certificated takeoff weight. Additionally, 14 CFR part 91 requirements for non–commercial general aviation operations apply to large and turbojet airplanes with additional specific requirements established 14 CFR part 91 subparts F and G.
3.4	**Flight operations**
3.4.3.5.3	No person may begin a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed— (1) During the day, to fly after that for at least 30 minutes; or (2) At night, to fly after that for at least 45 minutes. No person may operate a civil aircraft in IFR conditions unless it carries enough fuel (considering weather reports and forecasts and weather conditions) to— (1) Complete the flight to the first airport of intended landing; (2) Except as provided in paragraph (b) of this section, fly from that airport to the alternate airport; and (3) Fly after that for 45 minutes at normal cruising speed or, for helicopters, fly after that for 30 minutes at normal cruising speed.

3.4.3.5.4	No person may begin a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed— (1) During the day, to fly after that for at least 30 minutes; or (2) At night, to fly after that for at least 45 minutes. No person may operate a civil aircraft in IFR conditions unless it carries enough fuel (considering weather reports and forecasts and weather conditions) to— (1) Complete the flight to the first airport of intended landing; (2) Except as provided in paragraph (b) of this section, fly from that airport to the alternate airport; and (3) Fly after that for 45 minutes at normal cruising speed or, for helicopters, fly after that for 30 minutes at normal cruising speed.
3.4.3.6.1	For general aviation operations, the pilot is the operator as noted in the definition for operator in Annex 6, Part II and is not required to develop policies or procedures.
Chapter 3.11	**Manuals, logs and records**
3.11.2.3	The FAA considers the terms Maintenance Program and Inspection Program to be different. In addition, the FAA recognizes there are significant differences between an air carrier maintenance program and an inspection program used in non−air carrier operations. The FAA requires air carriers that operate certain types of aircraft to have a maintenance program (CAMP). In general, some non air−carrier aircraft, along with aircraft operated under 14 CFR part 91, are not required to have a maintenance program. However, FAA regulations and various Advisory Circulars allow the operator/registered owner to use a maintenance program if they decide to do so. 14 CFR § 91.409 identifies the inspection programs available for selection by a registered owner. Advisory Circular 120−16 may be used as a guide to develop a maintenance program.
PART III	
Section I	**General**
Chapter 1	**Definitions**
Section II	**International Commercial Air Transport**
1.3.1	The U.S. Flight Operations Quality Assurance (FOQA) program is a voluntary program.
Chapter 2 Reference 2.2.4.2	The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft.

2.2.8.3	Takeoff and landing under IFR. (a) Instrument approaches to civil airports. Unless otherwise authorized by the FAA, when it is necessary to use an instrument approach to a civil airport, each person operating an aircraft must use a standard instrument approach procedure prescribed in part 97 of this chapter for that airport. This paragraph does not apply to United States military aircraft. (b) Authorized DA/DH or MDA. For the purpose of this section, when the approach procedure being used provides for and requires the use of a DA/DH or MDA, the authorized DA/DH or MDA is the highest of the following: −−(1) The DA/DH or MDA prescribed by the approach procedure. −−(2) The DA/DH or MDA prescribed for the pilot in command. −−(3) The DA/DH or MDA appropriate for the aircraft equipment available and used during the approach. (c) Operation below DA/DH or MDA. Except as provided in § 91.176 of this chapter, where a DA/DH or MDA is applicable, no pilot may operate an aircraft, except a military aircraft of the United States, below the authorized MDA or continue an approach below the authorized DA/DH unless – −−(1) The aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of 11descent using normal maneuvers, and for operations conducted under part 121 or part 135 unless that descent rate will allow touchdown to occur within the touchdown zone of the runway of intended landing; −−(2) The flight visibility is not less than the visibility prescribed in the standard instrument approach being used; and −−(3) Except for a Category II or Category III approach where any necessary visual reference requirements are specified by the Administrator, at least one of the following visual references for the intended runway is distinctly visible and identifiable to the pilot: −−−−(i) The approach light system, except that the pilot may not descend below 100 feet above the touchdown zone elevation using the approach lights as a reference unless the red terminating bars or the red side row bars are also distinctly visible and identifiable. −−−−(ii) The threshold. The U.S. has not adopted the 2D and 3D instrument approach operation language.
2.3.3.2	The United States does not require that the operations manual describe the contents and use of the operational flight plan, but does require establishing procedures for locating each flight.
2.3.4.2.1	U.S. regulations allow for isolated aerodrome operations but do not require a point of no return (PNR) calculation.
2.3.4.2.3	U.S. regulations do not require two alternates in marginal weather conditions.
2.3.6.3	The fuel requirements for commuter and on demand operations are expressed in terms of flight time and do not include a specific altitude requirement.
Chapter 2 Reference 2.3.6.3.1	The United States does not require IFR helicopter operations to maintain a specific altitude above a destination.
Chapter 2 Reference 2.3.6.3.2	Fuel reserves for IFR helicopter operations is 30 minutes at normal cruise speed beyond the alternate heliport.
Chapter 2 Reference 2.3.6.3.3	The United States has no provisions addressing when a suitable alternate is unavailable. If the destination weather so requires, an alternate must be specified and 30−minute fuel reserves must be carried.

Chapter 2 Reference 2.3.6.4	The operations manual does not include procedures for loss of pressurization and other contingencies.
2.3.6.5	VFR: Fuel Supply No person may begin a flight operation in a helicopter under VFR unless, considering wind and forecast weather conditions, it has enough fuel to fly to the first point of intended landing and, assuming normal cruising fuel consumption, to fly after that for at least 20 minutes. IFR: Alternate airport requirements Except as provided in paragraph (b) of this section, no person may operate an aircraft in IFR conditions unless it carries enough fuel (considering weather reports or forecasts or any combination of them) to— (1) Complete the flight to the first airport of intended landing; (2) Fly from that airport to the alternate airport; and (3) Fly after that for 45 minutes at normal cruising speed or, for helicopters, fly after that for 30 minutes at normal cruising speed. (b) Paragraph (a)(2) of this section does not apply if part 97 of this chapter prescribes a standard instrument approach procedure for the first airport of intended landing and, for at least one hour before and after the estimated time of arrival, the appropriate weather reports or forecasts, or any combination of them, indicate that— (1) The ceiling will be at least 1,500 feet above the lowest circling approach MDA; or (2) If a circling instrument approach is not authorized for the airport, the ceiling will be at least 1,500 feet above the lowest published minimum or 2,000 feet above the airport elevation, whichever is higher; and (3) Visibility for that airport is forecast to be at least three miles, or two miles more than the lowest applicable visibility minimums, whichever is the greater, for the instrument approach procedure to be used at the destination airport.
Chapter 2 Reference 2.3.7.1	The operator’s manual must include: Procedures for refueling aircraft, eliminating fuel contamination, protecting from fire (including electrostatic protection), and supervising and protecting passengers during refueling;
Chapter 2 Reference 2.3.7.4	The operator’s manual must include: Procedures for refueling aircraft, eliminating fuel contamination, protecting from fire (including electrostatic protection), and supervising and protecting passengers during refueling; Procedures for ensuring compliance with emergency procedures, including a list of the functions assigned each category of required crewmembers in connection with an emergency and emergency evacuation duties under §135.123; AC 150/3230 requires compliance with National Fire Protection Association standards in NPA 407 which provides: Accessibility to aircraft by emergency fire equipment shall be considered in establishing aircraft fuel servicing positions.

Chapter 2 Reference 2.3.7.6	The operator's manual must include: Procedures for refueling aircraft, eliminating fuel contamination, protecting from fire (including electrostatic protection), and supervising and protecting passengers during refueling;
Chapter 2 Reference 2.3.8.1	The United States requires oxygen at all times for passengers experiencing cabin pressure altitudes above 15,000 ft, not 13,000 ft (620hPa) as per ICAO.
Chapter 2 Reference 2.3.8.2	In the event of a loss of pressurization the U.S. requires descent within four minutes to 14,000 ft, not the 13,000 ft as required by ICAO.
Chapter 2 Reference 2.4.1.3	The United States does not utilize a 1,000 ft minimum for non-precision approaches
Chapter 3 Reference 3.2.7	US does not require the helicopter weight limitations found I n3.2.7 a), c), and d).
3.2.7.2.1	The rotorcraft must be able to maintain any required flight condition and make a smooth transition from any flight condition to any other flight condition without exceptional piloting skill, alertness, or strength, and without danger of exceeding the limit load factor under any operating condition probable for the type, including— (1) Sudden failure of one engine, for multiengine rotorcraft meeting Transport Category A engine isolation requirements; (2) Sudden, complete power failure, and (3) Sudden, complete control system failures. Aircraft operational approval that does not require guaranteed engine out performance (Part 29 Category B or Part 27 Normal Category for single or multi−engine helicopters) shall be operated per the specific approved flight manual procedures that ensure a safe landing following an engine failure or all engine failure.
Chapter 4 Reference 4.2.2	Precaution Kits and First aid equipment are not required on helicopters.
Chapter 4 Reference 4.2.4.1	The US does not require marking of break-in points.
Chapter 4 Reference 4.2.4.2	The U.S. does not require marking of break-in points.
Chapter 4 Reference 4.4.2	The FAA does not specify a requirement for two landing lights.
Chapter 4 Reference 4.5.2.1	B) and C) Life−saving rafts and pyrotechnic devices are only required for extended over−water operations. That is in respect to helicopters in operations over water with a horizontal distance of more than 50 NM from the nearest shoreline and more than 50 NM from an offshore heliport structure.
Chapter 4 Reference 4.6	Helicopters operated over land areas designated as areas in which search and rescue would be especially difficult are not required to be equipped with signaling devices or life-saving equipment. The U.S. does not designate areas in which search and rescue would be especially difficult and therefore does not require additional equipment.
Chapter 5 Reference 5.1.1	Except when operating under controlled flight, helicopters are not required to have radio communications for night operations.
Chapter 5 Reference 5.2.1	The United States does not require a helicopter to be provided with navigation equipment in accordance with RNP types for navigation with the United States. However, the United States does provide information and operations specifications for IFR operating requirements when U.S. operators and aircraft conduct operations in the European Airspace Designated for Basic Area Navigation (RNP−5 and 10).
Chapter 6 Reference 6.4.2	The U.S. requires that records of work be retained until the work is repeated, superseded by other work for one year after the work is performed, but does not require the records be retained after the until has been permanently withdrawn from service.
Chapter 6 Reference 6.8.2	The U.S. requires that records of work must be retained until the work is repeated, superseded by other work, or for one year after the work is performed.

Chapter 7 Reference 7.4.2.2	US CAT helicopter pilots must demonstrate their proficiencies in the provisions of 7.4.2.2 through various means.
Chapter 9 Reference 9.5	The U.S. does not require that an operator keep a list of the emergency and survival equipment carried on board any of their helicopters engaged in international air navigation.
Chapter 11 Reference 11.1	In the United States, certificate holders regulated under Part 135 of the CFR shall prepare and keep current a manual setting forth the certificate holder's procedures and policies. Additionally, the Aircraft Operators Standard Security Program, (required by 49 CFR 1544, Subpart B) mandates crew members (both flight deck and attendants) be trained in the proper conduct of an aircraft cabin search, including likely areas of an aircraft that could conceal a weapon or improvised explosive devices and how to recognize weapons or devices.
Chapter 11 Reference 11.3	Upon receipt of a specific and credible threat, the aircraft operator must immediately notify the appropriate airport operator and the necessary ground and in−flight security operators. Additionally, upon receiving information that an act or suspected act of air piracy has been committed, the aircraft operator must notify the U.S. Transportation Security Administration. If the aircraft is outside U.S. airspace, the aircraft operator must notify the appropriate authorities of the State in which the aircraft is located. Additionally, if different, the operator must also notify the appropriate authorities in which the aircraft is to land.
Section III	**International General Aviation**
2.18	The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft.
2.6.3.2	The United States allows the continuation of an approach regardless of the reported weather.
5.2.1	The U.S. has no provision that visual landmarks used in VFR be located at least every 60 NM (110km).

ANNEX 7 – AIRCRAFT NATIONALITY AND REGISTRATION MARKS	
4.3.1	The marks are not required on wing structure; only tail or fuselage.
4.3.2	14 CFR § 45.25(b)(2) allows the marks to be placed on engine pods or appurtenances if they are located between the trailing edge of the wing and the leading edge of the horizontal stabilizer and are an integral part of the fuselage side surfaces. Annex 7, §4.3.2 does not mention the ability to place markings on the engine pod or appurtenances.
5.2.2	United States regulations use inches rather than centimeters. 14 CFR § 45.29 prescribes minimum heights of marks as 12 inches generally for fixed–wing aircraft, except marks may be 2 inches in some grandfathered cases, and 3 inches on a glider and for certain experimental certificates. Marks must be at least 3 inches high for airships, spherical balloons, nonspherical balloons, powered parachutes and weight–shift–control aircraft. Marks must be at least 12 inches high for rotorcraft except certain grandfathered rotorcraft. The minimum height of marks on small (12,500 lb. or less), fixed–wing aircraft is 3 inches when none of the following exceeds 180 knots true airspeed: (1) design cruising speed; (2) maximum operating limit speed; (3) maximum structural cruising speed; and (4) if none of the foregoing speeds have been determined for the aircraft, the speed shown to be the maximum cruising speed of the aircraft.
10.1	The U.S. identification plate does not include the nationality or registration mark.
10.2	With respect to location of identification plate: for aircraft other than 14 CFR part 121, location must be either adjacent to and aft of the rear–most entrance door or on the fuselage near the tail surfaces. a) There is no explicit U.S. registration requirement for unmanned free balloons and no requirement to carry an identification plate. A centralized registry of unmanned free balloons is not maintained. Operators are required to furnish the nearest ATC facility with a prelaunch notice containing information on the date, time, and location of release, and the type of balloon. This information is not maintained for any specified period of time. b) With respect to RPA/small Unmanned Aircraft, in place of a “plate”, the FAA requires “markings” for the small UAS, which are not required to be fireproof. The FAA only allows markings on external surfaces.

ANNEX 8 – AIRWORTHINESS OF AIRCRAFT	
PART II Procedures for Certification and Continued Airworthiness	
Chapter 1	**Type Certification**
1.2.5	ICAO requires that the design of an aircraft under ICAO Annex 8, Parts IIIB, IVB, and V use alternative fire extinguishing agents to halon in the lavatories, engines, and auxiliary power units. The United States does not have a similar requirement.
PART III Large Aeroplanes	
Part IIIA	*Aeroplanes over 5 700 kg for which application for certification was submitted on or after 13 June 1960, but before 2 March 2004*
Chapter 4	**Design and Construction**
4.1.6 (b), 4.1.6 (f), 4.1.6 (g), 4.1.6 (h), 4.1.6 (i)	The FAA does not have similar requirements relative to paragraphs b) and f). The FAA published a notice to amend the U.S. regulations with the purpose of eventually meeting the intent of these provisions for new designs. However, the amendment will not be retroactive and will apply to airplanes for which application for certification is submitted after the effective dates of the future amendment. For b), the FAA does not have a specific requirement for physical separation of systems. However, physical separation is considered in the means of compliance to various regulations such as 25.1309, 25.901(c) and 25.903(d). The FAA also does not have a requirement for continued safe flight and landing after ANY event resulting in damage to the airplane structure or systems. For g), h) and i), the FAA does not have specific requirements to consider the effects of explosions or incendiary devices.
Chapter 8	**Instruments and Equipment**
8.4.1	ICAO requires that airplanes operating on the movement area of an airport shall have airplane lights of such intensity, color, fields of coverage and other characteristics to furnish personnel on the ground with as much time as possible for interpretation and for subsequent maneuver necessary to avoid a collision. The FAA has no such requirement.
8.4.2	This provision addresses the lights' effect on outside observers in reference to "harmful dazzle." The U.S. regulations do not address the effect of aircraft lights on outside observers. However, visibility to other pilots and the lights' effect on the flight crew is addressed.
Chapter 9	**Operating Limitations and Information**
9.3.5	The United States does not have similar requirements. The FAA has begun work in an effort to amend the U.S. regulations with the purpose of eventually meeting the intent of these provisions.
Chapter 11	**Security**
11.2, 11.3, 11.4	With the exception of the door required by 11.3, the United States does not have similar requirements. The FAA has begun work in an effort to amend the U.S. regulations with the purpose of eventually meeting the intent of these provisions.
Part IIIB	***Aeroplanes over 5 700 kg for which application for certification was submitted on or after 2 March 2004***
Chapter 3	**Structure**

3.8.2	14 CFR 25.571 addresses structural durability. The damage−tolerance principles were introduced at amendment 25−45 of 14 CFR 25.571 (effective 12/1/1978), and therefore all applicable products/parts certified on or after 12/1/1978 are required to be damage−tolerant (except as provided by 14 CFR 21.101). It is noted that "Likely structural repairs" is not a consideration under 14 CFR 25.571, and therefore Section 3.8.2 appears to be different in this regard. However, as a post−type certification requirement, 14 CFR part 26 requires TC holders who develop published repair data to perform a damage tolerance evaluation of any repair that affects fatigue critical structure and incorporate any required damage tolerance−based inspections into the published repair data. In addition, the provisions for repairs reside in 14 CFR part 43, not part 21. All structural repairs are required to meet the certification basis of the airplane. 14 CFR 25.571 considers sonic fatigue whereas Section 3.8.1 of Annex 8 does not have a corresponding explicit requirement for sonic fatigue considerations. It is thus observed that 14 CFR 25.571 is more stringent in this regard. Lastly, amendment 25−132 of 14 CFR 25.571 (effective 1/14/2011) introduced the requirement for a Limit of Validity on the airframe of an airplane (on top of the requirement for considering WFD), and therefore 14 CFR is more stringent in this regard.
Chapter 4	**Design and Construction**
4.1.6	On November 28, 2008, the FAA adopted new regulations that meet the intent of these provisions. However, Part IIIB applies to airplanes with a date of application of March 2, 2004 or later, but the U.S. requirements apply to airplanes with a date of application of November 28, 2008 or later.
4.2 g)4)	The United States has not modified regulations to require manufacturers to include the elements of the aeroplane design associated with cargo compartment fire protection and a summary of the demonstrated standards that were considered in the process of aeroplane certification, in the documentation made available to the operator for those aircraft certificated on or after 1 January 2025.
D.2 (g)	Paragraph D.2.g.1 of the ICAO standard requires a fire suppression system for each cargo compartment accessible to a crewmember in a passenger−carrying airplane. U.S. requirements permit manual fire fighting in an accessible cargo compartment by a crewmember or members for an all−passenger−carrying airplane or a passenger−cargo combination carrying airplane. Additionally, the FAA does not have specific requirements to consider the effects of explosions or incendiary devices.
D.2 (h)	The United States does have provisions to protect against possible instances of cabin depressurization. However, the FAA does not have specific requirements to consider the effects of explosions or incendiary devices.
F.4.1	ICAO requires that airplanes operating on the movement area of an airport shall have airplane lights of such intensity, color, fields of coverage and other characteristics to furnish personnel on the ground with as much time as possible for interpretation and for subsequent maneuver necessary to avoid a collision. The U.S. has no such requirement.
PART IV Helicopters	
Part IVA	***Helicopters for which application for certification was submitted on or after 22 March 1991 but before 13 December 2007***
Chapter 2	**Flight**
2.2.3.1, 2.2.3.1.1 − 2.2.3.1.4	These provisions address take−off performance data for all classes of helicopters and require that this performance data include the take−off distance required. However, the United States has adopted the requirements only for Category A helicopters.

Chapter 6	**Rotor and Power Transmissions Systems and Powerplant Installation**
6.7	This provision requires that there be a means for restarting a helicopter's engine at altitudes up to a declared maximum altitude. In some cases the FAA does not require demonstration of engine restart capability. Since there is a different level of certitude for transport and normal category helicopters in the United States, the engine restart capability is only required for Category A and B helicopters (14 CFR Part 29) and Category A normal helicopters (14 CFR Part 27).
Chapter 7	**Instruments and Equipment**
7.4.2	This provision addresses the need to switch off or reduce the intensity of the flashing lights. The United States has minimum acceptable intensities that are prescribed for navigation lights and anti−collision lights. No reduction below these levels is possible.
7.4.2 (b)	This provision addresses the lights' effect on outside observers in reference to "harmful dazzle." The U.S. regulations do not address the effect of aircraft lights on outside observers. However, visibility to other pilots and the lights' effect on the flight crew is addressed.
PART V Small Aeroplanes	
Part VA	***Aeroplanes over 750 kg but not exceeding 5 700 kg for which application for certification was submitted on or after 13 December 2007 but before 7 March 2021***
Chapter 8	**Crashworthiness and Cabin Safety**
8.5 (e)	The FAA provides requirements for emergency lighting systems in 14CFR 23.812. These requirements do not address the impact of the fuel spillage on emergency lighting systems. Only commuter category airplanes are required to install emergency lighting systems.

ANNEX 9 – FACILITATION	
*The list of differences include Guam, Puerto Rico, and the U.S. Virgin Islands. The status of implementation of Annex 9 in Guam with respect to public health quarantine is not covered in the list of differences.	
Chapter 2	**Entry and Departure of Aircraft**
2.3	Written crew baggage declaration is required in certain circumstances, and a special Embarkation/Disembarkation Card is required for most alien crew members.
2.4	A General Declaration for all inbound and for outbound flights with commercial cargo are required. However, the General Declaration outbound flights with commercial cargo shall not be required if the declaratory statement is made on the air cargo manifest. No declaration is required for outbound flights without commercial cargo if Customs clearance is obtained by telephone.
Remarks	19 CFR 122
2.4.1	Each crew member must be listed showing surname, given name, and middle initial.
2.4.4	The signing or stamping of the General Declaration protects the carrier by serving as proof of clearance.
2.5	The crew list is required by statute.
2.7	There is a statutory requirement for the Cargo Manifest.
2.8	In order to combat illicit drug smuggling, the U.S. requires the additional following information: the shipper's and the consignee's name and address, the type of air waybills, weight, and number of house air waybills. The manifest submitted in electronic form may become legally acceptable in the future. However, until the compliance rate for the automated manifest is acceptable, the U.S. must be able to require the written form of the manifest.
Remarks	19 CFR 122.48
2.9	Nature of goods information is required.
2.10	Stores list required in all cases but may be recorded on General Declaration in lieu of a separate list.
2.17	A cargo manifest is required except for merchandise, baggage and stores arriving from and departing for a foreign country on the same through flight. "All articles on board which must be licensed by the Secretary of State shall be listed on the cargo manifest." "Company mail shall be listed on the cargo manifest."
2.18	Traveling general declaration and manifest, crew purchases and stores list as well as a permit to proceed are required under various conditions when aircraft arrive in the U.S. from a foreign area with cargo shown on the manifest to be traveling to other airports in the U.S. or to foreign areas.
2.21	There is a statutory requirement that such changes can only be made prior to or at the time of formal entry of the aircraft.
2.25	The U.S. does not support the use of insecticides in aircraft with passengers present. Pesticides registered for such use should not be inhaled. In effect, the passenger safety issue has precluded the use of such insecticides in the presence of passengers since 1979.
2.35	Advance notice is required of the number of citizens and aliens on board (non–scheduled flights only).
2.40	A copy of the contract for remuneration or hire is required to be a part of the application in the case of non–common carrier operations.
2.41	Single inspection is accorded certain aircraft not by size of aircraft but rather by type of operation. Loads (cargo) of an agricultural nature require inspection by a plant or animal quarantine inspector.
2.41c	Fees are charged for services provided in connection with the arrival of private aircraft (nonscheduled aircraft).
Chapter 3	**Entry and Departure of Persons and Their Baggage**
3.3	Medical reports are required in some cases.

Remarks	8 CFR 212.7 and INA 234
3.4	Documents such as visas with certain security devices serve as identity documents.
3.4.1	The U.S. has not standardized the personal identification data included in all national passports to conform with the recommendation in Doc 9303.
3.5.6	U.S. passport fees exceed the cost of the operation.
3.5.7	U.S. allows separate passports for minor dependents under the age of 16 entering the U.S. with a parent or legal guardian.
3.7	The U.S. has a pilot program that allows nationals of certain countries which meet certain criteria to seek admission to the U.S. without a visa for up to 90 days as a visitor for pleasure or business.
Remarks	22 CFR 41.112(d) INA 212(d)(4), INA 238, 8 CFR 214.2(c) INA 217
	The law permits visa waivers for aliens from contiguous countries and adjacent islands or in emergency cases. Visas are also waived for admissible aliens arriving on a carrier which is signatory to an agreement assuring immediate transit of its passengers provided they have a travel document or documents establishing identity, nationality, and ability to enter some country other than the U.S.
3.8	The U.S. charges a fee for visas.
3.8.3	Duration of stay is determined at port of entry.
Remarks	INA 217
3.8.4	A visitor to the U.S. cannot enter without documentation.
Remarks	INA 212(a) (26)
3.8.5	Under U.S. law, the duration of stay is determined by the Immigration Authorities at the port of entry and thus cannot be shown on the visa at the time of issuance.
3.10	Embarkation/Disembarkation Card does not conform to Appendix 4 in some particulars.
3.10.1	The operator is responsible for passengers' presentation of completed embarkation/disembarkation cards.
Remarks	8 CFR 299.3
3.10.2	Embarkation/Disembarkation cards may be purchased from the U.S. Government, Superintendent of Documents.
Remarks	8 CFR 299.3
3.14.2	The U.S. fully supports the electronic Advance Passenger Information (API) systems. However, the WCO/IATA Guideline is too restrictive and does not conform to the advancements in the PAXLIST EDIFACT international standard.
3.15	U.S. Federal Inspection Services' officials see individuals more than once.
3.16	Written baggage declarations by crew members are required in some instances.
3.17.1	The U.S. uses a multiple channel system rather than the dual channel clearance system.
3.23, 3.23.1	Statute requires a valid visa and passport of all foreign crew members.
3.24, 3.24.1, 3.25, 3.25.1, 3.25.2, 3.25.3	Crew members, except those eligible under Visa Waiver Pilot Program guidelines, are required to have valid passports and valid visas to enter the U.S.
Remarks	INA 212(a) (26), INA 252 and 253, 8 CFR 214.1(a), 8 CFR 252.1(c)
3.26, 3.27, 3.28, 3.29	Passports and visas are required for crew and non−U.S. nationals to enter the U.S.
3.33	Does not apply to landing card.
3.35	Law requires that the alien shall be returned to the place whence he/she came. Interpretation of this provision requires that he/she be returned to the place where he/she began his/her journey and not only to the point where he/she boarded the last−used carrier.
3.35.1	Law requires that certain aliens be deported from the U.S. at the expense of the transportation line which brought them to the U.S.
3.36	Statute provides for a fine if a passenger is not in possession of proper documents.

3.39.3	NOTE: The U.S. considers security for individuals in airline custody to be the carrier's responsibility.
3.40.2	Annex 9 recommends that fines and penalties be mitigated if an alien with a document deficiency is eventually admitted to the country of destination.
3.43	Operator can be held responsible for some detention costs.
Chapter 4	**Entry and Departure of Cargo and Other Articles**
4.20	The Goods Declaration as defined by the Kyoto Convention serves as the fundamental Customs document rather than the commercial invoice.
4.40	Aircraft equipment and parts, certified for use in civil aircraft, may be entered duty−free by any nation entitled to most−favored nation tariff treatment. Security equipment and parts, unless certified for use in the aircraft, are not included.
4.41	Customs currently penalizes the exporting carrier for late filing of Shipper's Export Declarations (SEDs) and inaccuracies on bills of lading with respect to the SEDs.
4.42	Regulations require entry of such items, most of which are dutiable by law.
4.44	Certain items in this category are dutiable by law.
4.48	Carriers are required to submit new documentation to explain the circumstances under which cargo manifest is not unladen. No penalty is imposed if the carrier properly reports this condition.
4.50	The procedures for adding, deleting, or correcting manifest items require filing a separate document.
4.55	The U.S. requires a transportation in−bond entry or a special manifest bonded movement for this type of movement.
Chapter 5	**Traffic Passing Through the Territory of a Contracting State**
5.1	Such traffic must be inspected at airports where passengers are required to disembark from the aircraft and no suitable sterile area is available.
5.2	Passports and visas are waived for admissible aliens arriving on a carrier which is signatory to an agreement assuring immediate transit of its passengers provided they have a travel document or documents establishing identity, nationality, and ability to enter some country other than the U.S.
5.3	Such traffic must be inspected at airports where no suitable sterile area is available.
5.4	Passports and visas are waived for admissible aliens arriving on a carrier which is signatory to an agreement assuring immediate transit of its passengers provided they have a travel document or documents establishing identity, nationality, and ability to enter some country other than the U.S.
5.4.1	Passengers will not be required to obtain and present visas if they will be departing from the U.S. within 8 hours of arrival or on the first flight thereafter departing for their destination.
5.8	Examination of transit traffic is required by law. Transit passengers without visas are allowed one stopover between the port of arrival and their foreign destination.
5.9	Passports and visas are required generally for transit passengers who are remaining in the U.S. beyond 8 hours or beyond the first available flight to their foreign destinations.
Chapter 6	**International Airports − Facilities and Services for Traffic**
6.3.1	Procedures involving scheduling committees raise a number of anti−trust problems under U.S. law.
6.33	Sterile physical facilities shall be provided, and in−transit passengers within those areas shall be subject to immigration inspection at any time.
Remarks	OI 214.2(c)
6.34	The U.S. inspects crew and passengers in transit.
6.36	The U.S. inspects crew and passengers in transit.

6.56	Operators of aircraft are statutorily required to pay overtime charges for federal inspections conducted outside normal scheduled hours of operation. This requirement places aircraft operators in a less favorable position than operators of highway vehicles and ferries who are statutorily exempt from such charges.
Chapter 8	**Other Facilitation Provisions**
8.1	Separate bonds are required.
8.3.2	Visas are issued by the Department of State and are not issued at ports of entry.

ANNEX 10 – AERONAUTICAL TELECOMMUNICATIONS	
ANNEX 10 – VOLUME I – RADIO NAVIGATION AIDS	
PART I	
Chapter 3	**Specifications for Radio Navigation Aids**
3.1.3.3.2	Per FAA Order 6050.32B, in the U.S., the ILS Localizer minimum signal strength requirement is ~~−120.5−~~ −123 dBW which is equivalent to −120.0 dBW/m2. ICAO requirement is −114 dBW/m2. However, FAA−E−2970 states in paragraph 3.3.3.4, “The transmitter of any subsystem shall have sufficient power to meet the coverage requirements as defined in paragraph 3.3.2.1
3.1.4.1, 3.1.4.2	The United States does not require such aircraft ILS equipment immunity. Interference from FM broadcast signals will not adversely affect aircraft navigation and communications systems in the United States airspace.
3.3.4.2	The US minimum VOR signal strength is -120 dBW/m2. The ICAO requirement is - 107 dBW/m2.
3.3.8.1, 3.3.8.2	The United States does not require such equipage for aircraft. Interference from FM broadcast signals will not adversely affect aircraft navigation and communications systems in the United States airspace.
3.7.3.5.3.1	Currently, the service volume of GBAS in FAA Order 6050.32B is 23 NM up to 10,000 feet vs. 15 and 20 NM ICAO standard.
3.7.3.5.4.1	In the U.S., the LAAS operates on center frequencies from 112.050 to 117.950 MHz vs. ICAO’s 108.0 to117.975 MHz with the lowest assignable frequency of 112.05 MHz and the last upper assignable frequency of 117.150 MHz vs. ICAO’s 108.025 MHz and 117.900 MHz respectively.
3.7.3.5.3	Currently, the service volume of GBAS in FAA Order 6050.32B is 23 NM up to 10,000 feet.
Appendix B	**TECHNICAL SPECIFICATIONS FOR THE GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS)**
3.6.7.2.3.5	A solution has been implemented in the US which does not require protection level bounding for rare anomalous ionospheric storms under extreme conditions. The solution requires denial of the approach service when anomalous ionosphere conditions could cause potentially large residual errors and allows operations when estimated residual errors would be below a threshold. The resulting errors under the threshold were found to be acceptable using specific safety assessments and criteria for this equipment.
3.6.8.2.2.5.3	In the U.S., the LAAS operates above the ILS LOC frequency band on center frequencies from 112.05 to 117.950 MHz; therefore, this standard does not apply.
3.6.8.2.2.6	Currently, the D/U standard for co−channel rejection is the same as the ICAO standard of 26 dB. However, D/U standard for the second adjacent channel rejection is 46 dB, which is 3 dB less than the ICAO standard. In addition, no third adjacent channel rejection standard exists in Order 6050.32B.
3.6.8.2.2.6.1c	In the U.S., the LAAS operates above the ILS LOC frequency band on center frequencies from 112.05 to 117.950 MHz; therefore, this standard does not apply.
3.6.8.2.2.6.2a	In the U.S., the LAAS receiver protection from an undesired LAAS signal offset by +/− 50 kHz is 46 dB vs. ICAOs 43 dB.
3.6.8.2.2.6.2c	In the U.S., the LAAS operates above the ILS LOC frequency band on center frequencies from 112.05 to 117.950 MHz.
3.6.8.2.2.6.3	In the U.S., the LAAS receiver protection from an undesired LAAS, VOR, or ILS signal offset by +/− 75 to +/− 975 kHz is not considered during the frequency assignment process.
3.6.8.2.2.6.3c	In the U.S., the LAAS operates above the ILS LOC frequency band on center frequencies from 112.05 to 117.950 MHz.
3.6.8.2.2.6.4	In the U.S., the LAAS receiver protection from an undesired LAAS, VOR, or ILS signal offset by +/− 1 MHz or more is not considered during the frequency assignment process.
Attachment C	**INFORMATION AND MATERIAL FOR GUIDANCE IN THE APPLICATION OF THE STANDARDS AND RECOMMENDED PRACTICES FOR ILS, VOR, PAR, 75 MHz MARKER BEACONS (EN−ROUTE), NDB AND DME**

2.6.2.1.1 and 2.6.2.1.2	The US frequency protections for ILS localizers are 3 dB more stringent than the ICAO protections (i.e. 23 dB vs. 20 dB for co−channel, −4 dB vs. −7 dB for interim 1st adjacent channels, −31 dB vs.−34 dB for final 1st adjacent channels, −43 dB vs. −46 dB for 2nd adjacent channels, and −47 dB vs. −50 dB for 3rd adjacent channels).
2.6.2.2.1	The US frequency protections for ILS localizers are 3 dB more stringent than the ICAO protections (i.e. 23 dB vs. 20 dB for co−channel, −4 dB vs. −7 dB for interim 1st adjacent channels, −31 dB vs. −34 dB for final 1st adjacent channels, −43 dB vs. −46 dB for 2nd adjacent channels, and −47 dB vs. −50 dB for 3rd adjacent channels).
3.4.6.1 a),b),c) 3.4.6.2 a),b),c)	The US frequency protections for co−channel, 1st and 2nd adjacent channels for VOR are 3 dB more stringent than the ICAO protections (i.e. 23 dB vs. 20 dB for co−channel, −4 dB vs. −7 dB for interim 1st adjacent channels, −31 dB vs. −34 dB for final 1st adjacent channels, −43 dB vs. −46 dB for 2nd adjacent channels).
3.4.6.1 d) 3.4.6.2 d)	The US does not provide any VOR frequency protection for 3rd adjacent channels. The ICAO protection provides −50 dB for 3rd adjacent channels.
7.1.8.1 7.1.8.2 Table C−6	The US frequency protections for co−channel and 1st adjacent channels for DME are 3 dB more stringent than the ICAO protections (i.e. 11 dB vs. 8 dB for co−channel, −39 dB vs. −42 dB for 1st adjacent channels). The US frequency protection for 2nd adjacent channels for DME is 28 dB more stringent than the ICAO protection (i.e. − 47 dB vs. − 75 dB).
Attachment D	**INFORMATION AND MATERIAL FOR GUIDANCE IN THE APPLICATION OF THE GNSS STANDARDS AND RECOMMENDED PRACTICES**
7.2.1.5 and Table D−4	In the U.S., the LAAS/LAAS co−channel geographical separation is 159 nm at 10,000 and 20,000 ft. ICAO separation is 195 nm at 10,000 ft. The first adjacent channel in the U.S. is equivalent to the ICAO second adjacent channel or +/− 50 kHz. The ICAO separation requirement for GBAS/GBAS second adjacent channel separation is 24 NM. In the U.S., geographical separations are not required between LAAS facilities, which differ in frequency by more than 25 kHz.
7.2.1.6 and Table D−5	Distances shown in ICAO Table D−5 are different from the distances in FAA Order 6050.32B figures 203 and 204 since in the U.S. the separation distances are calculated using the same method as for VOR described in FAA Order 6050.32B.
ANNEX 10 – VOLUME II – COMMUNICATION PROCEDURES INCLUDING THOSE WITH PANS STATUS	
Chapter 3	**General Procedures for the International Aeronautical Telecommunication Service**
3.2.2, 3.2.3	US regulations do not have any specific procedures for closing down international aeronautical stations. All international aeronautical stations in the U.S. operate continuously (24 hours a day and seven days a week)
Chapter 5	**Aeronautical Mobile Service – Voice Communications**
5.1.5	US regulations do not require pilots to wait 10 seconds before making a second call. US regulations only require “a few seconds” instead of “10 seconds.”
5.2.1.4.1.1	The United States directs that, for air carriers and other civil aircraft having FAA authorized call signs, the call sign should be followed by the flight number in group form; and for air carriers of foreign registry, the flight number should be stated in group form, or using separate digits if that is the format used by the pilot.
5.2.1.4.1.1	The United States issues surface wind using the word “wind” followed by the separate digits of the indicated wind direction to the nearest 10−degree multiple, the word “at” and the separate digits of the indicated velocity in knots, to include any gusts.
5.2.1.4.1.3	The United States issues the separate digits of a frequency, inserting the word “point” where the decimal point occurs.

5.2.2.7.1.2	US regulations do not specifically require pilots to send a message twice preceded with the phrase "TRANSMITTING BLIND". US regulations provides general procedures which allow pilots to make blind transmissions in case of emergency.
5.2.2.7.1.3.1	US regulations do not specifically require pilots to make a blind transmission preceded by "TRANSMITTING BLIND DUE TO RECEIVER FAILURE" with respect to the continuation of the flight of the aircraft. US regulations provide general procedures which allow pilots to make appropriate blind transmissions.
5.2.2.7.3.1	US regulations do not specifically require pilots to make a blind transmission preceded by "TRANSMITTING BLIND DUE TO RECEIVER FAILURE". US regulations provide general procedures which allow pilots to make appropriate blind transmissions.
5.3.1.2	The initial communication, and if considered necessary, any subsequent transmissions by an aircraft in distress "should" begin with the signal MAYDAY…
ANNEX 10 – VOLUME III – COMMUNICATION SYSTEMS	
PART I – DIGITAL DATA COMMUNICATION SYSTEMS	
Chapter 7	**Aeronautical Mobile Airport Communications System (AeroMACS)**
7.4.5.1 (d)	In the U.S., the power spectral density of any frequency removed from the assigned frequency above 150% of the authorized frequency is 50 dB or 55 + log (P) dB, whichever is the lesser attenuation. ICAO requires 50 dB.
PART II – VOICE COMMUNICATION SYSTEMS	
Chapter 2	**Aeronautical Mobile Service**
2.2.1.2	ICAO recommends a signal−in−space field strength of 75 uv/m (−109dBW/m^2), which translates to –82.5 dBm at the input of the receiver assuming 0 dB system losses. In the U.S., per RTCA DO−186a MOPS, the input power to the aircraft receiver should be −87 dBm.
2.3.3.1 2.3.3.2 2.3.3.3 2.3.3.4	The US does not require aircraft flying within the US airspace to meet the interference immunity performance of paragraphs 2.3.3.1, 2.3.3.2, and 2.3.3.3 and the recommendation of paragraph 2.3.3.4 of Annex 10, Vol 3, Part 2, Chapter 2. The FAA, based on the recommendations of the. Aviation Rulemaking Advisory Committee, made a decision, in 1996, not to adopt the FM interference immunity performance standards in the U.S. The U.S. continues to use its own FM immunity standards to avoid FM interference in aircraft.
2.3.3.4	The U.S. does not require airborne VHF communications receiving systems to meet the FM broadcast immunity performance standards recommended by ICAO.
ANNEX 10 – VOLUME IV – SURVEILLANCE AND COLLISION AVOIDANCE SYSTEMS	
Chapter 3	**Surveillance Systems**
3.1.1.7.13	SPI required to be transmitted for 18 +/− 1 second.
Chapter 4	**Airborne Collision Avoidance System**
4.2.3.3.4	The TSO−C118 (RTCA DO−197) implements this requirement. However, the requirement of limiting Mode S power to the level of Mode A/C (paragraph 4.2.3.4) is not implemented.
4.3.1.1.1	Specifies a nominal cycle of 1 second
4.3.2.1.2	The US specifies a false track probability of less than 1.2% for Mode A/C and less than 0.1% for Mode S.
4.3.5.3.1	Software versions 6.04A, version 7.0 and version 7.1 are all approved for operations in U.S. airspace.

4.3.5.3.2	No changes planned to the current U.S. guidance. Per Advisory Circular (AC) 120−55C, Change 1, Section 11 (MAINTENANCE), para c., TCAS Software Updates: “when necessary, operators should ensure that appropriate TCAS software updates are incorporated. The latest version of software for TCAS II is version 7.1. To ensure compatibility with international standards, the FAA encourages the installation of this software as practical. Software version 6.04A, version 7.0 and version 7.1 are all approved for operations in U.S. airspace.”
4.3.5.3.3	No changes planned to the current U.S. guidance. Per Advisory Circular (AC) 120−55C, Change 1, Section 11 (MAINTENANCE), para c., TCAS Software Updates: “when necessary, operators should ensure that appropriate TCAS software updates are incorporated. The latest version of software for TCAS II is version 7.1. To ensure compatibility with international standards, the FAA encourages the installation of this software as practical. Software version 6.04A, version 7.0 and version 7.1 are all approved for operations in U.S. airspace.”
ANNEX 10 – VOLUME V – AERONAUTICAL RADIO FREQUENCY SPECTRUM UTILIZATION	
Chapter 2	**Distress frequencies**
2.1.1	All emergency locator transmitters installed on or after 1 January 2002 and carried in compliance with Standards of Annex 6, Parts I, II and III may operate on both 406 MHz and 121.500 MHz or on 121.5 MHz.
Chapter 4	**Utilization of frequencies above 30 MHz**
4.1.2.4	FAA has not issued a mandatory carriage of VDL Mode 3 and VDL Mode 4. Participation in CPDLC (VDL Mode 2) “is at the discretion of the flight crew and/or operator” (NAS Data Communications Guide, version 11 dated May 26, 2021).
4.1.4.1	The US does not provide the 20 dB desired−to−undesired signal protection for VHF frequency assignments. The US provides 14 dB.
4.1.4.2	The US does not require aircraft flying within the US airspace to meet one of the characteristics dealing with the FM interference immunity performance. The U.S. Aviation Rulemaking Committee made a decision not to adopt the FM interference immunity performance standards in the U.S. The U.S. continues to use its own FM immunity standards to avoid FM interference in aircraft.
4.1.6.1.2	Assignable frequencies in 25 KHz steps in the US are 121.550 – 123.075 MHz instead of 121.550 – 123.050 MHz, and 123.125 – 136.975 MHz instead of 123.150 – 136.475 MHz.
4.2.3	The US does not follow the VOR assignment priority as defined in Section 4.2.3. Due to severe frequency congestion in the U.S., the ICAO frequency assignment priority order would result in inefficient use of the radio spectrum.

ANNEX 11 – AIR TRAFFIC SERVICES	
Chapter 1	**Definitions**
Accepting Unit	The term “receiving facility” is used.
Advisory Airspace	Advisory service is provided in terminal radar service areas and the outer area associated with class C airspace areas as well as Class E airspace.
Advisory Route	Advisory service is provided in terminal radar service areas and the outer area associated with class C airspace areas as well as Class E airspace.
ACAS–Airborne Collision Avoidance System	Traffic Alert and Collision Avoidance System (TCAS) – An airborne collision avoidance system based on radar beacon signals which operates independent of ground−based equipment. 14 CFR 1.1 further defines and breaks down TCAS into TCAS 1 – provides traffic advisories 2 – provides traffic advisories and resolution advisories in the vertical plane and 3 – provides traffic advisories and resolution advisories in the vertical and horizontal planes.
AIRMET	FAA Pilot Controller Glossary defines (in part) AIRMET as “A concise description of an occurrence or expected occurrence of specified en route weather phenomena that may affect the safety of aircraft operations, but at intensities lower than those that require the issuance of a SIGMET.” The ICAO definition of AIRMET narrows the purpose of the advisory to “low-level aircraft operations”, where the FAA has a more broad definition to encompass “all aircraft and…aircraft having limited capability…” Also, ICAO uses the term “forecast…for the flight information region” where the FAA uses “area forecast”. Difference in character (terminology) for area forecast. FAA uses AIRMETS for broader purpose.
Air taxiing	The U.S. does not limit this definition to apply only to above the surface of an aerodrome.
Air traffic control service	The U.S. uses “Air Traffic Control” with a definition of “A service operated by appropriate authority to promote the safe, orderly and expeditious flow of air traffic.”
Air traffic flow management (ATFM)	The U.S. does not define air traffic flow management.
Air traffic control unit	The U.S. uses the term “air traffic control facility”. (i.e., En Route, Terminal, or Flight Service)
Air traffic services reporting office	FAA Pilot Control Glossary defines (in part) Flight Service Stations (FSS) as “air traffic facilities which provide pilot briefing, en route communications and VFR search and rescue services, assist lost aircraft in emergency situations, relay ATC clearances, originate Notices to Airmen, broadcast aviation weather and NAS information, receive and process IFR flight plans....” FSSs are available to receive any reports concerning air traffic services as well as accept and file flight plans.
Air traffic services unit	The U.S. uses “Air Route Traffic Control Center”.
Airway	A Class E airspace area established in the form of a corridor, the centerline of which is defined by radio navigational aids.
Alert Phase	Alert – a notification to a position that there is an aircraft−to−aircraft or aircraft−to−airspace conflict as detected by automated problem detection.
Altitude	Height above ground level (AGL), mean sea level (MSL) or indicate altitude.
Approach Control Service	The U.S. not only includes arriving and departing controlled flights but also includes en route controlled flights. Additionally, as opposed to Annex 2 Amdt 47, the U.S. specifies the control facility that provides the service.
Approach Control Unit	The U.S. uses “Approach Control Facility” and also includes the possibility of providing ATS to en route aircraft.
Appropriate ATS Authority	The U.S. does not define “Appropriate ATS Authority.” The P/CG does contain a definition annotated as [ICAO] that adds “In the United States, the “appropriate ATS authority” is the Program Director for Air Traffic Planning and Procedures, ATP−1.”

Apron	The U.S. adds reference to seaplane operations to the definition.
Apron Management Service	Ground control or ramp control provide the same service. There is no formal definition in the Pilot Controller Glossary.
Area Control Centre	The U.S. uses the terms “Traffic Control Center”, “Radar Approach Control Facility”, and “Tower” to define a facility that provides air traffic control service to aircraft operating on IFR flight plans within controlled airspace and principally during the en route phase of flight. When equipment capabilities and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft.
Area Control Service	Air Traffic Control – A service operated by appropriate authority to promote the safe, orderly and expeditious flow of air traffic.
Controlled flight	The US uses the term “IFR Clearance”.
Control Zone	The US uses the term “Surface Area”. Surface area is airspace contained by the lateral boundary of the Class B, C, D, or E airspace designated for an airport that begins at the surface and extends upward.
Cruising Level	Cruising Altitude – an altitude or flight level maintained during en route level flight. This is a constant altitude and should not be confused with a cruise clearance.
Data Quality	The U.S. does not define data quality in its ATS operational documents.
Datum	The U.S. does not define datum in its ATS operational documents.
Declared capacity	The U.S. does not define declared capacity in its ATS operational documents.
DETRESFA	The U.S. does not define DETRESFA, although the P/CG does contain DETRESFA [ICAO].
Distress phase	The U.S. does not define distress phase, although the P/CG does contain the Annex 11 Amdt 52 verbiage in the definition of DETRESFA [ICAO].
Downstream Clearance	Same as air traffic control clearance. Authorization for an aircraft to proceed under conditions specified by an air traffic control unit.
Duty	While “duty” is frequently used in ATS documents and Title 14 of the U.S. Code of Federal Regulations, the U.S. does not define duty in its ATS operational documents.
Duty period	While “duty period” is used in ATS documents and Title 14 of the U.S. Code of Federal Regulations, the U.S. does not define duty period in its ATS operational documents.
Emergency phase	The U.S. defines ‘emergency’ but only uses some of the language from the Annex 11 Amdt 52 definition of “emergency phase”.
Final Approach	The U.S. defines the aspects of “Final Approach” separately.
Flight Information Centre	In the US, flight information service and alerting service are often provided by flight service stations.
Flight level	The U.S. uses the measurement of a level of constant atmospheric pressure related to a reference datum of 29.92 inches of mercury instead of 1 013.2 hectopascals (hPa).
Geodetic Datum	The U.S. does not define Geodetic datum in aeronautical publications.
Height	The U.S defines Height as the height above ground level (or AGL) expressed in meters or feet.
INCERFA	The U.S. does not define INCERFA.
Level	The term “altitude” is used.

Maneuvering Area	Any locality either on land, water, or structures, including airports/heliports and intermediate landing fields, which is used, or intended to be used, for the landing and takeoff of aircraft whether or not facilities are provided for the shelter, servicing, or for receiving or discharging passengers or cargo.
Meteorological office	No PCG definition. However FSSs perform this duty.
Movement Area	The runways, taxiways, and other areas of an airport/heliport which are utilized for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports/heliports with a tower, specific approval for entry onto the movement area must be obtained from ATC.
Non–duty period	The U.S. uses the term “rest period.”
Obstacle	The U.S. limits its definition of obstacle to an existing object, object of natural growth, or terrain at a fixed geographical location.
Pilot–in–command	The person who has final authority for the operation and safety of the flight has been designated as pilot in command before or during the flight and hold the appropriate category, class and type rating for the flight.
Prohibited area	The U.S. allows flight into prohibited areas with proper permissions. Special use area.
Radio navigation service	The U.S. describes its radio navigation services in AIP GEN 3.4 but does not define it.
Radiotelephony only	The U.S. does not explicitly define radiotelephony.
Traffic avoidance advice	US uses the term “Safety Alert”
Traffic information	US uses the term “Traffic Advisory”
Transferring unit	The U.S. uses the term “TRANSFERRING CONTROLLER.”
Uncertainty phase	The U.S. does not define uncertainty phase.
Waypoint	A predetermined geographical position used for route/instrument approach definition, progress reports, published VFR routes, visual reporting points or points for transitioning and/or circumnavigating controlled and/or special use airspace, that is defined relative to a VORTAC station or in terms of latitude/longitude coordinates.
Chapter 2	**General**
2.3.2	Annex 11, paragraph 2.3.2 directs the flight information service to accomplish objective d) of para 2.2, “to provide advice and information for the safe and efficient conduct of flight.” Details on procedures to accomplish this objective are contained in FAA Order JO 7210.3, Part 4, Flight Service Stations. Specific procedures for accomplishing this objective are contained in FAA Order JO 7110.10, Flight Services. Also, the FAA Pilot Controller Glossary defines a Flight Service Station (FSS) as an air traffic facility which provides pilot briefings, flight plan processing, en route flight advisories, search and rescue services, and assistance to lost aircraft and aircraft in emergency situations. FSSs also relay ATC clearances, process Notices to Airmen, and broadcast aviation weather and aeronautical information. In Alaska, FSSs provide Airport Advisory Services.
2.5.2.2.1	FAA uses the generic term “controlled airspace” and “surface areas”
2.5.2.2.1.1	FAA also provides this service in Class E.

2.5.2.2.2	Annex 11, paragraph 2.3.2 directs the flight information service to accomplish objective d) of para 2.2, “to provide advice and information for the safe and efficient conduct of flight.” Details on procedures to accomplish this objective are contained in FAA Order 7210.3, Part 4, Flight Service Stations. Specific procedures for accomplishing this objective are contained in FAA Order 7110.10, Flight Services. Also, the FAA Pilot Controller Glossary defines Flight Service Stations as “air traffic facilities which provide pilot briefing, en route communications and VFR search and rescue services, assist lost aircraft and aircraft in emergency situations, relay ATC clearances, originate Notices to Airmen, broadcast aviation weather and NAS information, receive and process IFR flight plans, and monitor NAVAIDs. In addition, at selected locations, FSSs provide En Route Flight Advisory Service (Flight Watch), take weather observations, issue airport advisories, and advise Customs and Immigration of trans−border flights.”
2.6.1	The U.S. has chosen not to use Class F airspace.
2.11.3.2.2	Class E−5 700/1200−foot airspace areas are used for transitioning aircraft to/from the terminal or en route environment.
2.11.3.3	En Route Domestic Airspace Areas consist of Class E airspace that extends upward from a specified altitude to provide controlled airspace in those areas where there is a requirement to provide IFR en route ATC services but the Federal airway structure is inadequate. En Route Domestic Airspace Areas may be designated to serve en route operations when there is a requirement to provide ATC service but the desired routing does not qualify for airway designation. Offshore/ Control Airspace Areas are locations designated in international airspace (between the U.S. 12−mile territorial limit and the CTA/FIR boundary, and within areas of domestic radio navigational signal or ATC radar coverage) wherein domestic ATC procedures may be used for separation purposes.
2.11.5.1	A Class D airspace area shall be of sufficient size to: 1. Allow for safe and efficient handling of operations. 2. Contain IFR arrival operations while between the surface and 1,000 feet above the surface, and IFR departure operations while between the surface and the base of adjacent controlled airspace. Size and shape may vary to provide for 1 and 2. The emphasis is that a Class D area shall be sized to contain the intended operations.
2.11.5.3	Refer to Surface Areas. The U.S. uses the term “Surface Area”. Surface area is airspace contained by the lateral boundary of the Class B, C, D, or E airspace designated for an airport that begins at the surface and extends upward.
2.26.5	No time is issued prior to taxi for take−off. Time checks are given to the nearest quarter minute.
2.29	Process is described in the FAA Safety Management System Manual and the FAA Order 1100.161.
Chapter 3	**Air Traffic Control Service**
3.2	Air Route Traffic Control Facilities (ARTCC) are used instead of Area Control Service, and Terminal Control Facilities instead of Approach Control Service.
3.6.2.4	The U.S does not specify notification of 2−way communication. The accepting unit shall not alter the clearance of an aircraft that has not yet reached the transfer of control point without the prior approval of the transferring unit.

3.7.3.1	Air crews are not required to read back clearances, only to acknowledge receipt of clearances. Certain air traffic controller safety−related parts of ATC clearances and instructions which are transmitted by voice and which must be read back according to US requirements. “Ensure pilots acknowledge all Air Traffic Clearances and ATC Instructions. When a pilot reads back an Air Traffic Clearance or ATC Instruction: Ensure that items read back are correct. Ensure the read back of hold short instructions, whether a part of taxi instructions or a LAHSO clearance. Ensure pilots use call signs and/or registration numbers in any read back acknowledging an Air Traffic Clearance or ATC Instruction.”
3.7.3.1.1	Air crews are not required to read back clearances, only to acknowledge receipt of clearances.
3.7.3.3	The U.S. only requires a read back for operations regarding hold short instructions. Controllers may request a read back whenever they feel a read back is necessary.
3.7.4.3	4−3−8. COORDINATION WITH RECEIVING FACILITY Coordinate with the receiving facility before the departure of an aircraft if the departure point is less than 15 minutes flying time from the transferring facility’s boundary unless an automatic transfer of data between automated systems will occur, in which case the flying time requirement may be reduced to 5 minutes or replaced with a mileage from the boundary parameter when mutually agreeable to both facilities.
3.7.4.4	4−4−5. CLASS G AIRSPACE Include routes through Class G airspace only when requested by the pilot. NOTE−1. Flight plans filed for random RNAV routes through Class G airspace are considered a request by the pilot. 2. Flight plans containing MTR segments in/through Class G airspace are considered a request by the pilot. Air Traffic Control Clearance means an authorization by air traffic control within controlled airspace.
Chapter 4	**Flight Information Service**
4.2.2	No Class F airspace. Collision Hazard information is provided between known traffic to aircraft in Class G airspace.
Chapter 6	**Air Traffic Services Requirements for Communications**
6.1.1.4 6.2.2.3.8	The US uses a 45 day retention period.
6.2.3.6	The US has a 45 day or longer retention period, with some exceptions. US en route facilities using system analysis recording tapes as their radar retention media shall retain radar data for 15 days. Facilities using a teletype emulator or console printout must be retained for 30 days unless they are related to an accident or incident. A facility using a console typewriter printout take−up device may retain the printout on the spool for 15 days after the last date on the spool. If a request is received to retain data information following an accident or incident, the printout of the relative data will suffice and the tape/disc may then be returned to service through the normal established rotational program.
6.3.1.3	The US has a 45 day or longer retention period except that those facilities utilizing an analog voice recorder system shall retain voice recordings for 15 days.
6.4.1.2	The US retains surveillance data recordings for 45 days or longer when they are pertinent to an accident or incident investigation, except that en route facilities using system analysis recording tapes as their radar retention media (regardless of the type of voice recorder system being used) shall retain voice recordings for 15 days and those facilities using an analog voice recorder system shall retain voice recordings for 15 days. FAA’s Air Traffic Control System Command Center shall retain voice recordings for 15 days.
Chapter 7	**Air Traffic Services Requirements for Information**
7.1.5	The term “communication station” is not used but the flight information is passed.

7.6	Temporary Flight Restrictions (TFRs) are the mechanism that would be implemented in such cases.
Appendix 2	**Principles Governing the Establishment and Identification of Significant Points**
3.1	In U.S., per FAA Order 8260.19K, there are some non−pronounceable points allowed: Stepdown fixes between FAF and MAP, Missed Approach Points (MAP), Computer Navigation Fixes (CNFs), and VFR Waypoints. Other exceptions include alphanumeric "Navigation Reference System" and the "Gulf of America Grid System" waypoints described in the United States AIP, ENR 4.4 and ENR 6.1, respectively.
Appendix 4	**ATS Airspace Classifications**
	Speed restrictions of 250 knots do not apply to aircraft operating beyond 12 NM from the coast line within the U.S. Flight Information Region, in offshore Class E airspace below 10,000 feet MSL. Paragraph (a) of § 91.117 of Title 14 of the Code of Federal Regulations (CFR) provides that "Unless otherwise authorized by the Administrator, no person may operate an aircraft below 10,000 feet MSL at an indicated airspeed of more than 250 knots." Within domestic airspace, a pilot operating at or above 10,000 MSL on an assigned speed adjustment greater than 250 knots is expected to comply with § 91.117(a) when cleared below 10,000 feet MSL without notifying Air Traffic Control (ATC). The Federal Aviation Administration has proceeded from an operational perspective that the speed restrictions of § 91.117(a) do not apply to U.S.-registered aircraft, via § 91.703(a)(3), when operating outside the United States (and not within another country's territorial airspace).
Appendix 6	**Fatigue Risk Management System (FRMS) Requirements**
1.2 f)	Breaks ("relief periods") required to be "of reasonable duration" (Section 2−5−4c) and "administered in an equitable manner" (2−6−6a)y. Minimum duration not defined except for a meal break (30 minutes).
1.2 Note	Variation from prescriptive schedule rules must be entered into the Daily Record of Facility Operation at the time of the deviation.
3 b)	FAA does not have *specific* processes for deviations or variations from prescriptive fatigue management regulations.

ANNEX 12 – SEARCH AND RESCUE
There are no reportable differences between U.S. regulations and the Standards and Recommended Practices contained in this Annex.

ANNEX 13 – AIRCRAFT ACCIDENT INVESTIGATION	
Chapter 5	**Investigation**
5.1.2	The U.S. is unable to investigate all serious incidents. A decision on whether to investigate a serious incident will consider factors such as the potential consequences of the incident, an assessment of available staff and resources, and the potential benefit to future safety.
5.12	The laws of the United States require the determination and public reporting of the facts, circumstances, and cause(s) or probable cause(s) of every civil aircraft accident. These laws, including the U.S. Freedom of Information Act, do not confine the disclosure of such information to an accident investigation or report. Accordingly, factual information such as statements, records of communications between persons, and air traffic recordings and transcripts are generally made public. United States law prohibits the public disclosure of cockpit voice recordings and visual recordings and limits the public disclosure of cockpit voice recording transcripts or written depictions of visual information to that information which is deemed relevant by the investigative authority. However, U.S. Courts can order the disclosure of the foregoing information for other than accident investigation purposes. Regarding issues related to the competent authority, the U.S. approach is consistent with Annex 13 and ICAO Document 10053 in recognizing limits in a State's ability to protect investigation records that may be sought for other public purposes, including freedom of information laws. This approach is fully consistent with the balancing test that has been broadly applied in the U.S. in determining whether applicable laws and regulations require the public disclosure of these records or permit their withholding from the public.
5.12.2	The laws of the United States require the determination and public reporting of the facts, circumstances, and cause(s) or probable cause(s) of every civil aircraft accident. These laws, including the U.S. Freedom of Information Act, do not confine the disclosure of such information to an accident investigation or report. United States law prohibits the public disclosure of cockpit voice recordings and visual recordings and limits the public disclosure of cockpit voice recording transcripts or written depictions of visual information to that information which is deemed relevant by the investigative authority. However, U.S. Courts can order the disclosure of the foregoing information for other than accident investigation purposes.
5.12.3	The laws of the United States require the determination and public reporting of the facts, circumstances, and cause(s) or probable cause(s) of every civil aircraft accident. These laws, including the U.S. Freedom of Information Act, do not confine the disclosure of such information to an accident investigation or report. United States law may afford protection of the names of persons involved in accidents or incidents in some cases, though not all cases. U.S. Courts can order the disclosure of the foregoing information. In addition, while it is U. S. practice not to identify names of such persons in accident and incident reports, those names may be revealed in background material made available to the public as required by U.S. law.
5.12.6	The United States supports the principle of not circulating, publishing, or providing access to a draft Report or any part thereof, or any documents obtained during the investigation, unless such a report or document has already been published or released by the State that conducted the investigation. However, the laws of the United States facilitate the public disclosure of information held by government agencies and commercial businesses. The U.S. government may not be able to restrict public access to a draft Report or any part thereof on behalf of the State conducting the investigation. However, regarding "Foreign Investigations", neither the Board, nor any agency receiving information from the Board, shall release records pertaining to an investigation until the State conducting the investigation issues its Final Report or 2 years following the date of the accident, whichever occurs first. The standard for determining public access to information requested from a U.S. government agency or a commercial business does not consider or require the express consent of the State conducting an investigation.

5.19	The United States may find it necessary to accept a limited number of advisors appointed to assist the accredited representative and will exercise discretion in determining whether the skills and expertise of the advisor(s) are appropriate for the conduct of the aircraft accident or incident investigation.
5.20	The United States may find it necessary to accept a limited number of advisors appointed to assist the accredited representative and will exercise discretion in determining whether the skills and expertise of the advisor(s) are appropriate for the conduct of the aircraft accident or incident investigation.
5.25	Concerning 5.25(h), investigative procedures observed by the United States allow full participation in all progress and investigation planning meetings; however, deliberations related to analysis, findings, probable causes, and safety recommendations are restricted to the investigative authority and its staff. However, contributions to these areas are permitted through timely written submissions, as specified in paragraph 5.25(i).
5.25 h)	Investigative procedures observed by the U.S. allow full participation in all progress and investigation planning meetings; however, deliberations related to analysis, findings, probable causes, and safety recommendations are restricted to the investigative authority and its staff. However, participation in these areas is extended through timely written submissions, as specified in paragraph 5.25 i).
5.26	Concerning 5.26(b): The United States supports, in principle, the privacy of the State conducting the investigation regarding the progress and the findings of that investigation. However, the laws of the United States facilitate the public disclosure of information held by U.S. government agencies and U.S. commercial businesses. Notwithstanding any other provision of law, regarding “Foreign Investigations”, neither the Board, nor any agency receiving information from the Board, shall release records pertaining to an investigation until the State conducting the investigation issues its Final Report or 2 years following the date of the accident, whichever occurs first. The standard for determining public access to information requested from a U.S. government agency or a commercial business does not consider or require the express consent of the State conducting the investigation.
5.26 b)	The U.S. supports, in principle, the privacy of the State conducting the investigation regarding the progress and the findings of that investigation. However, the laws of the U.S. facilitate the public disclosure of information held by U.S. government agencies and U.S. commercial business. The standard for determining public access to information requested from a U.S. government agency or a commercial business does not consider or require the expressed consent of the State conducting the investigation.
Chapter 6	**Reporting**
6.2	The United States supports the principle of not circulating, publishing, or providing access to a draft Report or any part thereof, or any documents obtained during the investigation, unless such a report or document has already been published or released by the State that conducted the investigation. However, the laws of the United States facilitate the public disclosure of information held by government agencies and commercial businesses. The U.S. government may not be able to restrict public access to a draft Report or any part thereof on behalf of the State conducting the investigation. However, regarding “Foreign Investigations”, neither the Board, nor any agency receiving information from the Board, shall release records pertaining to an investigation until the State conducting the investigation issues its Final Report or 2 years following the date of the accident, whichever occurs first. The standard for determining public access to information requested from a U.S. government agency or a commercial business does not consider or require the express consent of the State conducting an investigation.

6.3	The United States requires that comments on draft final reports be received within 30 days of transmittal unless an extension is provided.
6.13	The U.S. supports the principle of not circulating, publishing, or providing access to a draft report or any part thereof unless such a report or document has already been published or released by the State which conducted the investigation. However, the laws of the U.S. facilitate the public disclosure of information held by government agencies and commercial business. The U.S. government may not be able to restrict public access to a draft report or any part thereof on behalf of the State conducting the investigation. The standard for determining public access to information requested from a U.S. government agency or a commercial business does not consider or require the expressed consent of the State conducting an investigation.

ANNEX 14 – AERODROMES	
VOLUME 1 – AERODROME DESIGN AND OPERATIONS	
Chapter 1	**General**
1.2.1	Airports in the U.S. are for the most part owned and operated by local governments and quasi−government organizations formed to operate transportation facilities. The Federal Government provides air traffic control, operates and maintains NAVAIDs, provides financial assistance for airport development, certificates major airports, and issues standards and guidance for airport planning, design, and operational safety. There is general conformance with the Standards and Recommended Practices of Annex 14, Volume I. At airports with scheduled passenger service using aircraft having more than nine seats, compliance with standards is enforced through regulation and certification. At other airports, compliance is achieved through the agreements with individual airports under which Federal development funds were granted; or, through voluntary actions.
1.3.1 1.3.2 1.3.3 1.3.4	In the U.S., the Airport Reference Code is a two−component indicator relating the standards used in the airport's design to a combination of dimensional and operating characteristics of the largest aircraft expected to use the airport. The first element, Aircraft Approach Category, corresponds to the ICAO PANS−OPS approach speed groupings. The second, Airplane Design Group, corresponds to the wingspan groupings of code element 2 of the Annex 14, Aerodrome Reference Code. See below:

TBL GEN 1.7−1

Airport Reference Code (ARC)

Aircraft Approach Category	Approximate Annex 14 Code Number
A	1
B	2
C	3
D	4
E	−
Airplane Design Group	**Corresponding Annex 14 Code Letter**
I	A
II	B
III	C
IV	D
V	E
VI	F (proposed)

EXAMPLE: AIRPORT DESIGNED FOR B747−400 ARC D−V.

Chapter 2	**Aerodrome Data**
2.2.1	The airport reference point is recomputed when the ultimate planned development of the airport is changed.
2.9.6 2.9.7	Minimum friction values have not been established to indicate that runways are ''slippery when wet.'' However, U.S. guidance recommends that pavements be maintained to the same levels indicated in the ICAO Airport Services Manual.
2.11.3	If inoperative fire fighting apparatus cannot be replaced immediately, a NOTAM must be issued. If the apparatus is not restored to service within 48 hours, operations shall be limited to those compatible with the lower index corresponding to operative apparatus.
2.12 e)	Where the original VASI is still installed, the threshold crossing height is reported as the center of the on−course signal, not the top of the red signal from the downwind bar.

Chapter 3	Physical Characteristics
3.1.2*	The crosswind component is based on the ARC: 10.5 kt for AI and BI; 13 kt for AII and BII; 16 kt for AIII, BIII and CI through DIII; 20 kts for AIV through DVI.
3.1.9*	Runway widths (in meters) used in design are shown in the table below:

Width of Runway in Meters

Aircraft Approach Category	Airplane Design Group					
	I	II	III	IV	V	VI
A	18[1]	23[1]	––	––	45	60
B	18[1]	23[1]	––	––	45	60
C	30	30	30[2]	45	45	60
D	30	30	30[2]	45	45	60

[1]The width of a precision (lower than $^3/_4$ statute mile approach visibility minimums) runway is 23 meters for a runway which is to accommodate only small (less than 5,700 kg) airplanes and 30 meters for runways accommodating larger airplanes.

[2]For airplanes with a maximum certificated take−off mass greater than 68,000 kg, the standard runway width is 45 meters.

3.1.12	FAA allows dual and triple simultaneous independent approaches when runway centerlines are at least 3100 feet apart.
3.1.14*	Longitudinal runway slopes of up to 1.5 percent are permitted for aircraft approach categories C and D except for the first and last quarter of the runway where the maximum slope is 0.8 percent.
3.1.19*	Minimum and maximum transverse runway slopes are based on aircraft approach categories as follows: For categories A and B: 1.0 − 2.0 percent C and D: 1.0 − 1.5 percent
3.2.2	The U.S. does not require that the minimum combined runway and shoulder widths equal 60 meters. The widths of shoulders are determined independently.
3.2.3*	The transverse slope on the innermost portion of the shoulder can be as high as 5 percent.
3.3.3 3.3.4* 3.3.5*	A strip width of 120 meters is used for code 3 and 4 runways for precision, nonprecision, and non−instrumented operations. For code 1 and 2 precision runways, the width is 120 meters. For non−precision/visual runways, widths vary from 37.5 meters up to 120 meters.
3.3.9*	Airports used exclusively by small aircraft (U.S. Airplane Design Group I) may be graded to distances as little as 18 meters from the runway centerline.
3.3.14*	The maximum transverse slope of the graded portion of the strip can be 3 percent for aircraft approach categories C and D and 5 percent for aircraft approach categories A and B.
3.3.15*	The U.S. does not have standards for the maximum transverse grade on portions of the runway strip falling beyond the area that is normally graded.
3.3.17*	Runways designed for use by smaller aircraft under non−instrument conditions may be graded to distances as little as 18 meters from the runway centerline (U.S. Airplane Design Groups I and II).
3.4.2*	For certain code 1 runways, the runway end safety areas may be only 72 meters.
3.7.1* 3.7.2*	The U.S. does not provide Standards or Recommended Practices for radio altimeter operating areas.
3.8.3*	The U.S. specifies a 6 meter clearance for Design Group VI airplanes.
3.8.4*	The taxiway width for Design Group VI airplanes is 30 meters.
3.8.5*	The U.S. also permits designing taxiway turns and intersections using the judgmental oversteering method.

3.8.7*	Minimum separations between runway and taxiway centerlines, and minimum separations between taxiways and taxilanes and between taxiway/taxilanes and fixed/moveable objects are shown in the tables that follow. Generally, U.S. separations are larger for non−instrumented runways, and smaller for instrumented runways, than the Annex. Values are also provided for aircraft with wingspans up to 80 meters.

Minimum Separations Between Runway Centerline and Parallel Taxiway/Taxilane Centerline

Operation	Aircraft Approach Category	Airplane Design Group						
		I[1]	I	II	III	IV	V	VI
Visual runways and runways with not lower than 3/4−statute mile (1,200 meters) approach visibility minimums	A and B	150 feet 45 meters	225 feet 67.5 meters	240 feet 72 meters	300 feet 90 meters	400 feet 120 meters	−−	−−
Runways with lower than 3/4−statute mile (1,200 meters) approach visibility minimums	A and B	200 feet 60 meters	250 feet 75 meters	300 feet 90 meters	350 feet 105 meters	400 feet 120 meters	−−	−−
Visual runways and runways with not lower than 3/4−statute mile (1,200 meters) approach visibility minimums	C and D	−−	300 feet 90 meters	300 feet 90 meters	400 feet 120 meters	400 feet 120 meters	400[2] feet 120[2] meters	600 feet 180 meters
Runways with lower than 3/4−statute mile (1,200 meters) approach visibility minimums	C and D	−−	400 feet 120 meters	400 feet 120 meters	400 feet 120 meters	400 feet 120 meters	400[2] feet 120[2] meters	600 feet 180 meters

[1]These dimensional standards pertain to facilities for small airplanes exclusively.

[2]Corrections are made for altitude: 120 meters separation for airports at or below 410 meters; 135 meters for altitudes between 410 meters and 2,000 meters; and, 150 meters for altitudes above 2,000 meters.

Minimum Taxiway and Taxilane Separations:

	Airplane Design Group					
	I	II	III	IV	V	VI
Taxiway centerline to parallel taxiway/ taxilane centerline	69 feet 21 meters	105 feet 32 meters	152 feet 46.5 meters	215 feet 65.5 meters	267 feet 81 meters	324 feet 99 meters
Fixed or movable object	44.5 feet 13.5 meters	65.5 feet 20 meters	93 feet 28.5 meters	129.5 feet 39.5 meters	160 feet 48 meters	193 feet 59 meters
Taxilane centerline to parallel taxilane centerline	64 feet 19.5 meters	97 feet 29.5 meters	140 feet 42.5 meters	198 feet 60 meters	245 feet 74.5 meters	298 feet 91 meters
Fixed or movable object	39.5 feet 12 meters	57.5 feet 17.5 meters	81 feet 24.5 meters	112.5 feet 34 meters	138 feet 42 meters	167 feet 51 meters

3.8.10*	Line−of−sight standards for taxiways are not provided in U.S. practice, but there is a requirement that the sight distance along a runway from an intersecting taxiway must be sufficient to allow a taxiing aircraft to safely enter or cross the runway.
3.8.11*	Transverse slopes of taxiways are based on aircraft approach categories. For categories C and D, slopes are 1.0−1.5 percent; for A and B, 1.0−2.0 percent.
3.11.5	The runway centerline to taxi−holding position separation for code 1 is 38 meters for non−precision operations and 53 meters for precision. Code 3 and 4 precision operations require a separation of 75 meters, except for “wide bodies,” which require 85 meters.

Dimensions and Slopes for Protective Areas and Surfaces

	Precision Approach	Non−precision Instrument Approach			Visual Runway	
	All runways	All runways[a]	Runways other than utility[b]	Utility runways[d]	Runways other than utility	Utility runways
Width of inner edge	305 meters	305 meters	152 meters	152 meters	152 meters	76 meters[c]
Divergency (each side)	15 percent	15 percent	15 percent	15 percent	10 percent	10 percent
Final width	4,877 meters	1,219 meters	1,067 meters[c]	610 meters	475 meters[c]	381 meters[c]
Length	15,240 meters	3,048 meters[c]	3,048 meters[c]	1,524 meters[c]	1,524 meters[c]	1,524 meters[c]
Slope: inner 3,049 meters	2 percent	2.94 percent[c]	2.94 percent[c]	5 percent[c]	5 percent[c]	5 percent[c]
Slope: beyond 3,048 meters	2.5 percent[c]					

[a]With visibility minimum as low as 1.2 km; [b]with visibility minimum greater than 1.2 km; [c]criteria less demanding than Annex 14 Table 4−1 dimensions and slopes. [d]Utility runways are intended to serve propeller−driven aircraft having a maximum take−off mass of 5,570 kg.

Chapter 4	Obstacle Restriction and Removal
4.1	Obstacle limitation surfaces similar to those described in 4.1−4.20 are found in 14 CFR Part 77.
4.1.21	A balked landing surface is not used.
4.1.25	The U.S. does not establish take−off climb obstacle limitation areas and surface, *per se*, but does specify protective surfaces for each end of the runway based on the type of approach procedures available or planned. The dimensions and slopes for these surfaces and areas are listed in the table above.
4.2	The dimensions and slopes of U.S. approach areas and surfaces are set forth in the above table. Aviation regulations do not prohibit construction of fixed objects above the surfaces described in these sections.
4.2.1	Primary surface is also used as a civil airport imaginary surface. Primary surface is a surface longitudinally centered on a runway. U.S. uses the width of the primary surface of a runway as prescribed in 14 CFR Part 77.25 for the most precise approach existing or planned for either end of that runway.
4.2.8	The slope and dimensions of the approach surface applied to each end of a runway are determined by the most precise approach existing or planned for that runway end.
4.2.9	Approach surfaces are applied to each end of each runway based upon the type of approach available or planned for that runway end.
4.2.10, 4.2.11	Any proposed construction of or alteration to an existing structure is normally considered to be physically shielded by one or more existing permanent structure(s), natural terrain, or topographic feature(s) of equal or greater height if the structure under consideration is located within the lateral dimensions of any runway approach surface but would not exceed an overall height above the established airport elevation greater than that of the outer extremity of the approach surface, and located within, but would not penetrate, the shadow plane(s) of the shielding structure(s).
4.2.12	The basic principle in applying shielding guidelines is whether the location and height of the structures are such that aircraft, when operating with due regard for the shielding structure, would not collide with that structure.
4.2.16	The size of each imaginary surface is based on the category of each runway according to the type of approach available or planned for that runway. The slope and dimensions of the approach surface applied to each end of a runway are determined by the most precise approach existing or planned for that runway end.
4.2.17	Approach surfaces are applied to each end of each runway based upon the type of approach available or planned for that runway end.

Chapter 5	Visual Aids for Navigation
5.2.1.7*	The U.S. does not require unpaved taxiways to be marked.
5.2.2.2*	The U.S. does not require a runway designator marking for unpaved runways.
5.2.2.4	Zeros are not used to precede single–digit runway markings. An optional configuration of the numeral 1 is available to designate a runway 1 and to prevent confusion with the runway centerline.
5.2.4.2* 5.2.4.3*	Threshold markings are not required, but sometimes provided, for non–instrument runways that do not serve international operations.
5.2.4.5	The current U.S. standard for threshold designation is eight stripes, except that more than eight stripes may be used on runways wider than 45 meters. After 1 January 2008, the U.S. standard will comply with Annex 14.
5.2.4.6	The width and spacing of threshold stripes will comply with Annex 14 after 1 January 2008.
5.2.4.10	When a threshold is temporarily displaced, there is no requirement that runway or taxiway edge markings, prior to the displaced threshold, be obscured. These markings are removed only if the area is unsuitable for the movement of aircraft.
5.2.5.2 5.2.5.3*	Aiming point markings are required on precision instrument runways and code 3 and 4 runways used by jet aircraft.
5.2.5.4	The aiming point marking commences 306 meters from the threshold at all runways.
5.2.6.3	The U.S. pattern for touchdown zone markings, when installed on both runway ends, is only applicable to runways longer than 4,990 feet. On shorter runways, the three pair of markings closest to the runway midpoint are eliminated.
5.2.6.4	The U.S. standard places the aiming point marking 306 meters from the threshold where it replaces one of the pair of three stripe threshold markings. The 306 meters location is used regardless of runway length.
5.2.6.5*	Touchdown zone markings are not required at a non–precision approach runway, though they may be provided.
5.2.7.4*	Runway side stripe markings on a non–instrument runway may have an over–all width of 0.3 meter.
5.2.8.3	Taxiway centerline markings are never installed longitudinally on a runway even if the runway is part of a standard taxi route.
5.2.9.5*	The term ‘‘ILS’’ is used instead of CAT I, CAT II, CAT III.
5.2.11.4 5.2.11.5* 5.2.11.6*	Check–point markings are provided, but the circle is 3 meters in diameter, and the directional line may be of varying width and length. The color is the yellow used for taxiway markings.
5.2.12	Standards for aircraft stand markings are not provided.
5.2.13.1*	Apron safety lines are not required although many airports have installed them.
5.2.14.1	The U.S. does not have standards for holding position markings on roadways that cross runways. Local traffic control practices are used.
5.3.1.1 5.3.1.2*	The U.S. does not have regulations to prevent the establishment of non–aviation ground lights that might interfere with airport operations.
5.3.1.3 5.3.1.4	New approach lighting installations will meet the frangibility requirements. Some existing non–frangible systems may not be replaced before 1 January 2005.
5.3.2.1* 5.3.2.2* 5.3.2.3*	There is no requirement for an airport to have emergency runway lighting available if it does not have a secondary power source. Some airports do have these systems, and there is an FAA specification for these lights.
5.3.3.1 5.3.3.3	Only airports served by aircraft having more than 30 seats are required to have a beacon, though they are available at many others.
5.3.3.6	Although the present U.S. standard for beacons calls for 24–30 flashes per minute, some older beacons may have flash rates as low as 12 flashes per minute.
5.3.3.8	Coded identification beacons are not required and are not commonly installed. Typically, airport beacons conforming to 5.3.3.6 are installed at locations served by aircraft having more than 30 seats.

5.3.4.1	While the U.S. has installed an approach light system conforming to the specifications in 5.3.4.10 through 5.3.4.19, it also provides for a lower cost system consisting of medium intensity approach lighting and sequenced flashing lights (MALSF) at some locations.
5.3.4.2	In addition to the system described in 5.3.4.1, a system consisting of omnidirectional strobe lights (ODALS) located at 90 meters intervals extending out to 450 meters from the runway threshold is used at some locations.
5.3.4.10 through 5.3.4.19	The U.S. standard for a precision approach category I lighting system is a medium intensity approach lighting system with runway alignment indicator lights (MALSR). This system consists of 3 meters barrettes at 60 meters intervals out to 420 meters from the threshold and sequenced flashing lights at 60 meters intervals from 480 meters to 900 meters. A crossbar 20 meters in length is provided 300 meters from the threshold. The total length of this system is dependent upon the ILS glide path angle. For angles 2.75° and higher, the length is 720 meters.
5.3.4.16 5.3.4.31	The capacitor discharge lights can be switched on or off when the steady−burning lights of the approach lighting system are operating. However, they cannot be operated when the other lights are not in operation.
5.3.4.20	The U.S. standard for a precision approach category II and III lighting system has a total length dependent upon the ILS glide path angle. For angles 2.75° and higher, the length is 720 meters.
5.3.5.1 5.3.5.3 5.3.5.4	Visual approach slope indicator systems are not required for all runways used by turbojets except runways involved with land and hold short operations that do not have an electronic glideslope system.
5.3.5.2	In addition to PAPI and APAPI systems, VASI and AVASI type systems remain in service at U.S. airports with commercial service. Smaller general aviation airports may have various other approach slope indicators including tri−color and pulsating visual approach slope indicators.
5.3.5.27	The U.S. standard for PAPI allows for the distance between the edge of the runway and the first light unit to be reduced to 9 meters for code 1 runways used by nonjet aircraft.
5.3.5.42	The PAPI obstacle protection surface used is as follows: The surface begins 90 meters in front of the PAPI system (toward the threshold) and proceeds outward into the approach zone at an angle 1 degree less than the aiming angle of the third light unit from the runway. The surface flares 10 degrees on either side of the extended runway centerline and extends 4 statute miles from its point of origin.
5.3.8.4	The U.S. permits the use of omnidirectional runway threshold identification lights.
5.3.13.2	The U.S. does not require the lateral spacing of touchdown zone lights to be equal to that of touchdown zone marking when runways are less that 45 meters wide. The lateral distance between the markings is 22 meters when installed on runways with a width of 45 meters or greater. The distance is proportionately smaller for narrower runways. The lateral distance between touchdown zone lights is nominally 22 meters but may be reduced to 20 meters to avoid construction problems.
5.3.14	The U.S. has no provision for stopway lights.
5.3.15.1 5.3.15.2*	Taxiway centerline lights are required only below 183 meters RVR on designated taxi routes. However, they are generally recommended whenever a taxiing problem exists.
5.3.15.3 8.2.3	Taxiway centerline lights are not provided on runways forming part of a standard taxi route even for low visibility operations. Under these conditions, the taxi path is coincident with the runway centerline, and the runway lights are illuminated.
5.3.15.5	Taxiway centerline lights on exit taxiways presently are green. However, the new U.S. standard which is scheduled to be published by 1 January 98 will comply with the alternating green/yellow standard of Annex 14.
5.3.15.7*	The U.S. permits an offset of up to 60 cm.
5.3.16.2 8.2.3	Taxiway edge lights are not provided on runways forming part of a standard taxi route.

5.3.17.1 5.3.17.2* 5.3.17.3 5.3.17.4* 5.3.17.5*	Stop bars are required only for runway visual range conditions less than a value of 183 meters at taxiway/runway intersections where the taxiway is lighted during low visibility operations. Once installed, controlled stop bars are operated at RVR conditions less than a value of 350 meters.
5.3.17.6	Elevated stop bar lights are normally installed longitudinally in line with taxiway edge lights. Where edge lights are not installed, the stop bar lights are installed not more than 3 meters from the taxiway edge.
5.3.17.9	The beamspread of elevated stop bar lights differs from the inpavement lights. The inner isocandela curve for the elevated lights is ± 7 horizontal and ± 4 vertical.
5.3.17.12	The U.S. standard for stop bars, which are switchable in groups, does not require the taxiway centerline lights beyond the stop bars to be extinguished when the stop bars are illuminated. The taxiway centerline lights which extend beyond selectively switchable stop bars are grouped into two segments of approximately 45 meters each. A sensor at the end of the first segment re–illuminates the stop bar and extinguishes the first segment of centerline lights. A sensor at the end of the second segment extinguishes that segment of centerline lights.
5.3.18.1*	Taxiway intersection lights are also used at other hold locations on taxiways such as low visibility holding points.
5.3.18.2	Taxiway intersection lights are collocated with the taxiway intersection marking. The marking is located at the following distances from the centerline of the intersecting taxiway: Airplane Design Group — Distance I — 13.5 meters II — 20 meters III — 28.5 meters IV — 39 meters V — 48.5 meters VI — 59 meters
5.3.19.1 5.3.19.2*	Runway guard lights are required only for runway visual range conditions less than a value of 350 meters.
5.3.19.4 5.3.19.5	Runway guard lights are placed at the same distance from the runway centerline as the aircraft holding distance, or within a few feet of this location.
5.3.19.12	The new U.S. standard for in–pavement runway guard lights complies with Annex 14. However, there may be some existing systems that do not flash alternately.
5.3.20.4*	The U.S. does not set aviation standards for flood lighting aprons.
5.3.21	The U.S. does not provide standards for visual docking guidance systems. U.S. manufacturers of these devices generally adhere to ICAO SARPS.
5.3.23.1	The U.S. does not have a requirement for providing roadholding position lights during RVR conditions less than a value of 350 meters.
5.4.1.2	Signs are often installed a few centimeters taller than specified in Annex 14, Volume 1, Table 5–4.
5.4.1.5	Sign inscriptions are slightly larger, and margins around the sign slightly smaller, than indicated in Annex 14, Volume 1, Appendix 4.
5.4.1.6	The sign luminance requirements are not as high as specified in Appendix 4. The U.S. does not specify a nighttime color requirement in terms of chromaticity.
5.4.2.2 5.4.2.4 5.4.2.9 5.4.2.14 5.4.2.16	All signs used to denote precision approach holding positions have the legend ‘‘ILS.’’
5.4.2.6	U.S. practice uses the NO ENTRY sign to prohibit entry by aircraft only.
5.4.2.8 5.4.2.10	The second mandatory instruction sign is usually not installed unless added guidance is necessary.

5.4.2.15	Signs for holding aircraft and vehicles from entering areas where they would infringe on obstacle limitation surfaces or interfere with NAVAIDs are inscribed with the ***designator of the approach***, followed by the letters "*APCH*"; *for example, "15−APCH."*
5.4.3.13 5.4.3.15	U.S. practice is to install signs about 3 to 5 meters closer to the taxiway/runway (See Annex 14, Table 5−4).
5.4.3.16	The U.S. does not have standards for the location of runway exit signs.
5.4.3.24	A yellow border is used on all location signs, regardless of whether they are stand−alone or collocated with other signs.
5.4.3.26	U.S. practice is to use Pattern A on runway vacated signs, except that Pattern B is used to indicate that an ILS critical area has been cleared.
5.4.3.30*	The U.S. does not have standards for signs used to indicate a series of taxi−holding positions on the same taxiway.
5.4.4.4*	The inscription, "VOR Check Course," is placed on the sign in addition to the VOR and DME data.
5.4.5.1*	The U.S. does not have requirements for airport identification signs, though they are usually installed.
5.4.6.1*	Standards are not provided for signs used to identify aircraft stands.
5.4.7.2	The distance from the edge of road to the road−holding position sign conforms to local highway practice.
5.5.2.2* 5.5.7.1*	Boundary markers may be used to denote the edges of an unpaved runway.
5.5.3	There is no provision for stopway edge markers.
Chapter 6	**Visual Aids for Denoting Obstacles**
6.1	Recommended practices for marking and lighting obstacles are found in FAA Advisory Circular 70/7460−1J, Obstruction Marking and Lighting.
6.1.3	Any temporary or permanent structure, including all appurtenances, that exceeds an overall height of 200 feet (61m) above ground level or exceeds any obstruction standard contained in 14 CFR Part 77, should normally be marked and/or lighted.
6.2.1	This chapter provides recommended guidelines to make certain structures conspicuous to pilots during daylight hours. One way of achieving this conspicuity is by painting and/or marking these structures. Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in the case of wind turbines, number of structures and overall layout of design.
6.2.3*	The maximum dimension of the rectangles in a checkered pattern is 6 meters on a side.
6.2.7	Markers should be displayed in conspicuous positions on or adjacent to the structure so as to retain the general definition of the structure. They should be recognizable in clear air from a distance of at least 4,000 feet (1219m) and in all directions from which aircraft are likely to approach. Markers should be distinctively shaped, i.e., spherical or cylindrical, so they are not mistaken for items that are used to convey other information. They should be replaced when faded or otherwise deteriorated.
6.2.11	Flag markers should be displayed around, on top, or along the highest edge of the obstruction. When flags are used to mark extensive or closely grouped obstructions, they should be displayed approximately 50 feet (15m) apart. The flag stakes should be of such strength and height that they will support the flags above all surrounding ground, structures, and/or objects of natural growth.
6.2.12	Each side of the flag marker should be at least 2 feet (0.6m) in length. Standard does not specifically address mobile objects.
6.2.14	Color patterns. Flags should be colored as follows: solid, orange and white, and checkerboard. Standard does not specifically address mobile objects.

6.3.1	Obstruction lighting may be displayed on structures as follows: aviation red obstruction lights; medium intensity flashing white obstruction lights, high intensity flashing white obstruction lights, dual lighting, obstruction lights during construction, obstruction lights in urban areas, and temporary construction equipment lighting.
6.3.11	The height of the structure AGL determines the number of light levels. Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in the case of wind turbines, number of structures and overall layout of design.
6.3.13	When a structure lighted by a high intensity flashing light system is topped with an antenna or similar appurtenance exceeding 40 feet (12m) in height, a medium intensity flashing white light (L−865) should be placed within 40 feet (12m) from the tip of the appurtenance. This light should operate 24 hours a day and flash simultaneously with the rest of the lighting system.
6.3.14	The number of light units recommended depends on the diameter of the structure at the top.
6.3.16	Lights should be installed on the highest point at each end. At intermediate levels, lights should be displayed for each 150 feet (46m) or fraction thereof. The vertical position of these lights should be equidistant between the top lights and the ground level as the shape and type of obstruction will permit. One such light should be displayed at each outside corner on each level with the remaining lights evenly spaced between the corner lights.
6.3.17	Lights should be installed on the highest point at each end. At intermediate levels, lights should be displayed for each 150 feet (46m) or fraction thereof. The vertical position of these lights should be equidistant between the top lights and the ground level as the shape and type of obstruction will permit. One such light should be displayed at each outside corner on each level with the remaining lights evenly spaced between the corner lights.
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6.3.19, 6.3.20	One or more light units is needed to obtain the desired horizontal coverage. The number of light units recommended per level (except for the supporting structures of catenary wires and buildings) depends upon the average outside diameter of the specific structure, and the horizontal beam width of the light fixture. The light units should be installed in a manner to ensure an unobstructed view of the system by a pilot approaching from any direction. The number of lights recommended is the minimum. The U.S. does not utilize Type A or Type B obstacle lights. Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in the case of wind turbines, number of structures and overall layout of design.
6.3.21* 6.3.22*	The effective intensity, for daylight−luminance background, of Type A high−intensity obstacle lights is 270,000 cd ± 25 percent. The effective intensity, for daylight−luminance background, of Type B high−intensity obstacle lights is 140,000 cd ± 25 percent.
6.3.22	The height of the structure AGL determines the number of light levels. The light levels may be adjusted slightly, but not to exceed 10 feet (3m) when necessary to accommodate guy wires and personnel who replace or repair light fixtures. If an adjacent object shields any light, horizontal placement of the lights should be adjusted or additional lights should be mounted on that object to retain or contribute to the definition of the obstruction. Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in the case of wind turbines, number of structures and overall layout of design.

6.3.23, 6.3.24, 6.3.27, 6.3.29	Red obstruction lights are used to increase conspicuity during nighttime. The red obstruction lighting system is composed of flashing omnidirectional beacons (L−864) and/or steady burning (L−810) lights. When one or more levels is comprised of flashing beacon lighting, the lights should flash simultaneously. The U.S. does not utilize Type A, B, C, or D obstacle lights. Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in
6.3.28	When objects within a group of obstructions are approximately the same overall height above the surface and are located a maximum of 150 feet (46m) apart, the group of obstructions may be considered an extensive obstruction. Install light units on the same horizontal plane at the highest portion or edge of prominent obstructions. Light units should be placed to ensure that the light is visible to a pilot approaching from any direction.
6.3.30, 6.3.31, 6.3.32	The medium intensity flashing white light system is normally composed of flashing omni−directional lights. Medium intensity flashing white obstruction lights may be used during daytime and twilight with automatically selected reduced intensity for nighttime operation. The U.S. does not utilize Type A, B, or C obstacle lights. Medium intensity flashing white (L−865) obstruction lights may provide conspicuity both day and night. Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in the case of structures and overall layout of design.
6.3.35	Use high intensity flashing white obstruction lights during daytime with automatically selected reduced intensities for twilight and nighttime operations. When high intensity white lights are operated 24 hours a day, other methods of marking and lighting may be omitted. The U.S. does not utilize Type A obstacle lights. Lighting with high intensity (L−856) flashing white obstruction lights provides the highest degree of conspicuity both day and night. Recommendations on marking structures can vary depending on terrain features, weather patterns, geographic location, and in the case of wind turbines, number of structures and overall layout of design.
Chapter 7	**Visual Aids for Denoting Restricted Use Areas**
7.1.2*	A ‘‘closed’’ marking is not used with partially closed runways. See 5.2.4.10, above.
7.1.4	Crosses with shapes similar to figure 7.1, illustration b) are used to indicate closed runways and taxiways. The cross for denoting a closed runway is yellow.
7.1.5	In the U.S. when a runway is permanently closed, only the threshold marking, runway designation marking, and touchdown zone marking need be obliterated. Permanently closed taxiways need not have the markings obliterated.
7.1.7	The U.S. does not require unserviceability lights across the entrance to a closed runway or taxiway when it is intersected by a night−use runway or taxiway.
7.4.4	Flashing yellow lights are used as unserviceability lights. The intensity is such as to be adequate to delineate a hazardous area.
Chapter 8	**Equipment and Installations**
8.1.5* 8.1.6* 8.1.7 8.1.8	A secondary power supply for non−precision instrument and non−instrument approach runways is not required, nor is it required for all precision approach runways. The U.S. does not provide secondary power specifically for take−off operations below 550 meters RVR.
8.2.1	There is no requirement in the U.S. to interleave lights as described in the Aerodrome Design Manual, Part 5.
8.2.3	See 5.3.15.3 and 5.3.16.2
8.7.2* 8.7.3 8.7.4*	Glide slope facilities and certain other installations located within the runway strip, or which penetrate obstacle limitation surfaces, may not be frangibly mounted.

8.9.7*	A surface movement surveillance system is recommended for operations from 350 meters RVR down to 183 meters. Below 183 meters RVR, a surface movement radar or alternative technology is generally required.
Chapter 9	**Emergency and Other Services**
9.1.1	Emergency plans such as those specified in this section are required only at airports serving scheduled air carriers using aircraft having more than 30 seats. These airports are certificated under 14 CFR Part 139. In practice, other airports also prepare emergency plans.
9.1.12	Full−scale airport emergency exercises are conducted at intervals, not to exceed three years, at airports with scheduled passenger service using aircraft with more than 30 seats.
9.2.1	Rescue and fire fighting equipment and services such as those specified in this section are required only at airports serving scheduled air carriers in aircraft having more than 30 seats. Such airports generally equate to ICAO categories 4 through 9. Other airports have varying degrees of services and equipment.
9.2.3*	There is no plan to eliminate, after 1 January 2005, the current practice of permitting a reduction of one category in the index when the largest aircraft has fewer than an average of five scheduled departures a day.
9.2.4 9.2.5	The level of protection at U.S. airports is derived from the length of the largest aircraft serving the airport similar to the Annex's procedure, except that maximum fuselage width is not used. U.S. indices A−E are close equivalents of the Annex's categories 5−9. The U.S. does not have an equivalent to category 10.

Fire Extinguishing Agents and Equipment

Index	Aircraft length		Total minimum quantities of extinguishing agents			
	More than	Not more than	Dry chemical	Water for protein foam	Minimum trucks	Discharge rate[1]
A		27 meters	225 kg	0	1	See below
B	27 meters	38 meters	225 kg	5,700 L	1	See below
C	38 meters	48 meters	225 kg	5,700 L	2	See below
D	48 meters	60 meters	225 kg	5,700 L	3	See below
E	60 meters		225 kg	11,400 L	3	See below

[1]Truck size	Discharge rate
1,900 L but less than 7,600	at least 1,900 L per minute but not more than 3,800 L per minute
7,600 L or greater	at least 2,280 L per minute but not more than 4,560 L per minute

9.2.10	The required firefighting equipment and agents by index are shown in the table above. The substitution equivalencies between complementary agents and foam meeting performance level A are also used for protein and fluoroprotein foam. Equivalencies for foam meeting performance level B are used only for aqueous film forming foams.
9.2.18*	There is no specific requirement to provide rescue equipment as distinguished from firefighting equipment.
9.2.19*	At least one apparatus must arrive and apply foam within 3 minutes with all other required vehicles arriving within 4 minutes. Response time is measured from the alarm at the equipment's customary assigned post to the commencement of the application of foam at the mid−point of the farthest runway.
9.2.29*	For ICAO category 6 (U.S. index B), the U.S. allows one vehicle.

9.4.4	At the present time, there is no requirement to perform tests using a continuous friction measuring device with self−wetting features. Some U.S. airports own these devices, while others use less formal methods to monitor build−up of rubber deposits and the deterioration of friction characteristics.
9.4.15	The standard grade for temporary ramps is 15 feet longitudinal per 1 inch of height (0.56 percent slope) maximum, regardless of overlay depth.
9.4.19	There is no U.S. standard for declaring a light unserviceable if it is out of alignment or if its intensity is less than 50 percent of its specified value.

*Indicates ICAO Recommended Practice

ANNEX 14 – AERODROMES	
VOLUME II – HELIPORTS	
Chapter 1	**Definitions**
Declared distances	The U.S. does not use declared distances (take–off distance available, rejected take–off distance available, or landing distance available) in designing heliports.
Final approach and take–off area (FATO)	The U.S. ‘‘take–off and landing area’’ is comparable to the ICAO FATO, and the U.S. ‘‘FATO’’ is more comparable to the ICAO TLOF. The U.S. definition for the FATO stops with ‘‘the take–off manoeuvre is commenced.’’ This difference in definition reflects a variation in concept. The rejected take–off distance is an operational computation and is not required as part of the design.
Helicopter stand	The U.S. does not use the term “helicopter stand.” Instead, the U.S. considers paved or unpaved aprons, helipads, and helidecks, all as helicopter parking areas; i.e., helicopter stands.
Safety area	The U.S. considers the safety area to be part of the take–off and landing area which surrounds the FATO and does not call for or define a separate safety area.
Touchdown and lift–off area (TLOF)	The U.S. differs in the definition by considering helipads and helidecks to be FATO. The U.S. does not define the load bearing area on which the helicopter may touch down or lift–off as a TLOF.
Chapter 2	**Heliport Data**
2.1 d)	The U.S. does not measure or report a safety area as a separate feature of a heliport.
2.2	The U.S. does not ‘‘declare’’ distances for heliports.
Chapter 3	**Physical Characteristics**
3.1.2	The U.S. does not distinguish between single–engine and multi–engine helicopters for the purposes of heliport design standards. Neither does the U.S. design or classify heliports on the basis of helicopter performance. The U.S. FATO dimensions are at least equal to the rotor diameter of the design single rotor helicopter and the area must be capable of providing ground effect. The U.S. does not have alternative design standards for water FATOs, elevated heliports, or helidecks.
3.1.3	The U.S. has a single gradient standard; i.e., 5 percent, except in fueling areas where the limit is 2 percent, which is applicable for all portions of heliports.
3.1.6 3.1.7* 3.1.8*	The U.S. does not require or provide criteria for clearways in its design standards. It does encourage ownership and clearing of the land underlying the innermost portion of the approach out to where the approach surface is 10.5 meters above the level of the take–off surface.
3.1.14 to 3.1.21	Safety areas are considered part of the take–off and landing area (or primary surface) in U.S. heliport design. The take–off and landing area of the U.S. design criteria, based on 2 rotor diameters, provides for the ICAO safety area; however, the surface does not have to be continuous with the FATO or be load bearing.
3.1.22	Taxiway widths are twice the undercarriage width of the design helicopter.
3.1.23	The U.S. requires 1.25 rotor diameters plus 2 meters of separation between helicopter ground taxiways.
3.1.24	The U.S. gradient standard for taxiways is a maximum of 5 percent.
3.1.32*	The U.S. sets no gradient standards for air taxiways.
3.1.33	The U.S. requires 1.5 rotor diameters of separation between hover or air taxiways.
3.1.34	The U.S. standards for air taxiways and air transit routes are combined as the standards for hover taxiways noted in paragraphs 3.1.23, 3.1.24 and 3.1.33.
3.1.35	The U.S. sets no maximum turning angle or minimum radius of turn on hover taxiways.
3.1.36	The U.S. gradient standard for aprons is a maximum of 5 percent except in fueling areas where it is 2 percent.
3.1.37	The U.S. criterion for object clearances is 1/3 rotor diameter or 3 meters, whichever is greater.
3.1.38	The U.S. standard for helipads (comparable to helicopter stands) is 1.5 times the undercarriage length or width, whichever is greater.

3.1.39	The U.S. standard for separation between FATO center and the centerline of the runway is 120 meters.
3.2.2	The U.S. does not apply either a performance related or an alternative design standard for elevated heliport facilities.
3.2.5 to 3.2.10	The U.S. does not use safety areas in its heliport design.
3.3 3.4	In the U.S., shipboard and relocatable off−shore helicopter ‘‘helideck’’ facilities are under the purview of the U.S. Coast Guard and utilize the International Maritime Organization (IMO) code. Fixed off−shore helideck facilities are under the purview of the Department of Interior based on their document 351DM2. Coastal water helideck facilities are under the purview of the individual affected States.
Chapter 4	**Obstacle Restriction and Removal**
4.1.1	The U.S. approach surface starts at the edge of the take−off and landing area.
4.1.2 a)	The U.S. approach surface width adjacent to the heliport take−off and landing area is a minimum of 2 rotor diameters.
4.1.2 b) 2)	The U.S. precision instrument approach surface flares from a width of 2 rotor diameters to a width of 1,800 meters at the 7,500 meters outer end. The U.S. does not use a note similar to the one that follows 4.1.4, as it does not differentiate between helicopter requirements on the basis of operational performance.
4.1.5	The outer limit of the U.S. transitional surfaces adjacent to the take−off and landing area is 76 meters from the centerline of the VFR approach/departure surfaces. The transitional surface width decreases to zero at a point 1,220 meters from the take−off and landing area. It does not terminate at an inner horizontal surface or at a predetermined height.
4.1.6	The U.S. transitional surfaces have a fixed width, 76 meters less the width of the take−off and landing area, from the approach centerline for visual operations and an outwardly flaring width to 450 meters for precision instrument operations. The U.S. does not use an inner horizontal surface nor terminate the transitional surfaces at a fixed/predetermined height.
4.1.7 b)	Since the U.S. includes the safety area in the take−off and landing area, the comparable elevation is at the elevation of the FATO.
4.1.9 through 4.1.20	The U.S. does not use the inner horizontal surface, the conical surface, or take−off climb surface described in these paragraphs or the note following paragraph 4.1.20 for heliport design.
4.1.21 through 4.1.25	The U.S. does not have alternative criteria for floating or fixed−in−place helidecks.
4.2	The U.S. has no requirement for a note similar to the one following the heading ‘‘Obstacle limitation requirements.’’
4.2.1	The U.S. criteria does not require a take−off climb surface or a conical obstacle limitation surface to establish a precision instrument approach procedure.
4.2.2	The U.S. criteria does not require a take−off climb surface or a conical obstacle limitation surface to establish a non−precision instrument approach procedure.
4.2.3	The U.S. criteria does not require a take−off climb obstacle limitation surface to establish a non−instrument approach procedure.
4.2.4*	The U.S. has no requirement for protective surfaces such as an inner horizontal surface or a conical surface.
4.2.5	The U.S. does not have tables for heliport design comparable to the ICAO Tables 4−1 to 4−4.
4.2.6	The U.S. subscribes to the intent of this paragraph to limit object heights in the heliport protective surfaces but uses fewer surfaces with different dimensions for those surfaces.
4.2.7*	The U.S. subscribes to the intent of this paragraph but uses different dimensional surfaces.
4.2.8	The U.S. criterion requires that a heliport have at least one approach and departure route and encourages multiple approaches separated by arcs of 90 to 180 degrees.
4.2.9*	The U.S. has no requirement that a heliport’s approach surfaces provide 95 percent usability.

4.2.10	Since the U.S. does not differentiate between surface level and elevated heliports, the comments to paragraphs 4.2.1 through 4.2.5 above apply.
4.2.11	The U.S. has no requirement for a take−off climb surface. It does require at least one approach/departure surface and encourages that there be as many approaches as is practical separated by arcs of 90 to 180 degrees.
4.2.12 through 4.2.22	Since the U.S. does not have alternative design criteria for helidecks or shipboard heliports, there are no comparable U.S. protective surface requirements.
Tables 4−1, 4−2, 4−3, 4−4	The U.S. does not have tables comparable to the ICAO Tables 4−1 to 4−4.
Chapter 5	**Visual Aids**
5.2.1	The U.S. does not have criteria for markings to be used in defining winching areas.
5.2.3.3	The U.S. maximum mass markings are specified in 1,000 pound units rather than tonnes or kilograms.
5.2.4.3	The U.S. criterion requires FATO markers but is not specific on the number or spacing between markers.
5.2.4.4	The U.S. criteria for FATO markers is not dimensionally specific.
5.2.6	The U.S. does not require, or have criteria for, marking an aiming point.
5.2.7.1	The U.S. does not require specific criteria for marking floating or off−shore fixed−in−place helicopter or helideck facilities.
5.2.8	The U.S. does not require marking the touchdown area.
5.2.9	The U.S. does not have criteria for heliport name markings.
5.2.10	The U.S. does not have a requirement to mark helideck obstacle−free sectors.
5.2.12.2	The U.S. criterion places the air taxiway markers along the edges of the routes rather than on the centerline.
5.2.12.3	The U.S. criterion for air taxiway markers does not specify the viewing area or height to width ratio.
5.3.2.3	The U.S. heliport beacon flashes white−green−yellow colors rather than a series of timed flashes.
5.3.2.5*	The U.S. criteria is not specific on the light intensity of the flash.
5.3.3.3	The U.S. criterion specifies a 300 meters approach light system configuration. The light bars are spaced at 30 meters intervals. The first two bars of the configuration are single lights, the next two bars are two lights, then two bars with three lights, then two bars with four lights, and finally two bars with five lights.
5.3.3.4	The U.S. approach light system uses aimed PAR−56 lights.
5.3.3.6	The U.S. heliport approach light system does not contain flashing lights.
5.3.5.2 a)	The U.S. requires an odd number of lights, but not less than three lights per side.
5.3.5.2 b)	The U.S. requires a minimum of eight lights for a circular FATO and does not specify the distance between lights.
5.3.5.4*	The U.S. criteria does not specify light distribution.
5.3.6	The U.S. does not have specific criteria for aiming point lights.
5.3.8	The U.S. does not have standards for winching area lighting.
Chapter 6	**Heliport Services**
6.1*	The U.S. requirements for rescue and fire fighting services at certificated heliports are found in 14 CFR Part 139. Criteria for other heliports are established by the National Fire Protection Association (NFPA) pamphlets 403 or 418, or in regulations of local fire departments.

*Indicates ICAO Recommended Practice

ANNEX 15 – AERONAUTICAL INFORMATION SERVICES	
Chapter 1	**General**
ASHTAM	The U.S. doesn't have a series of NOTAM called ASHTAM.
Danger area	Danger Areas do not exist in the U.S. Equivalent/similar areas are defined, designated & charted as Prohibited, Warning, Alert, and Restricted Areas."
Pre−flight Information Bulletin (PIB)	The US does not use the term PIB.
Prohibited Area	Additional terminology used by the US.
Restricted Area	Additional terminology used by the US.
SNOWTAM	The US presents the information via a NOTAM.
1.1.20	The US does not use the term ASHTAM.
1.2.2.2	The U.S. utilizes Geoid−03 which is a component of the North American Vertical Datum of 1988 (NAVD 88).
Chapter 5	**Aeronautical Information Products and Services**
5.2.1	Currently, the U.S. does not utilize the ICAO format for domestic NOTAMs. The US NOTAMs that are distributed as International NOTAMs are in ICAO format (excluding the L/L).
5.2.5.1. f)	The US does not produce an Aircraft Parking / Docking Chart.
5.2.6	The U.S. does not use the term SNOWTAM and ASHTAM.
5.3.3.4.1	The United States does not publish the horizontal extent of obstacles.
Chapter 6	**Aeronautical Information Updates**
6.3.2.1	The U.S. does not routinely publish "trigger" NOTAMs when an AIP amendment is issued.
6.3.2.3	The U.S. does not provide a NOTAM for accidental release of radioactive material, toxic chemicals, pyrotechnic demonstrations, sky lanterns, rocket debris, or volcanic ash deposition.

ANNEX 16 – ENVIRONMENTAL PROTECTION	
VOLUME I – AIRCRAFT NOISE	
Reference: Part 36 of Title 14 of the United States Code of Federal Regulations	
Chapter 1	
1.7	Each person who applies for a type certificate for an airplane covered by 14 CFR Part 36, irrespective of the date of application for the type certificate, must show compliance with Part 36.
Chapter 2	
2.1.1	For type design change applications made after 14 August 1989, if an airplane is a Stage 3 airplane prior to a change in type design, it must remain a Stage 3 airplane after the change in type design regardless of whether Stage 3 compliance was required before the change in type design.
2.3.1 a)	Sideline noise is measured along a line 450 meters from and parallel to the extended runway centerline for two− and three−engine aircraft; for four−engine aircraft, the sideline distance is 0.35 NM.
2.4.2	Noise level limits for Stage 2 derivative aircraft depend upon whether the engine by−pass ratio is less than two. If it is, the Stage 2 limits apply. Otherwise, the limits are the Stage 3 limits plus 3 dB or the Stage 2 value, whichever is lower.
2.4.2.2 b)	Take−off noise limits for three−engine, Stage 2 derivative airplanes with a by−pass ratio equal to or greater than 2 are 107 EPNdB for maximum weights of 385,000 kg (850,000 lb) or more, reduced by 4 dB per halving of the weight down to 92 EPNdB for maximum weights of 28,700 kg (63,177 lb) or less. Aircraft with a by−pass ratio less than 2 only need meet the Stage 2 limits.
2.5.1	Trade−off sum of excesses not greater than 3 EPNdB and no excess greater than 2 EPNdB.
2.6.1.1	For airplanes that do not have turbo−jet engines with a by−pass ratio of 2 or more, the following apply: a) four−engine airplanes – 214 meters (700 feet); b) all other airplanes – 305 meters (1,000 feet). For all airplanes that have turbo−jet engines with a by−pass ratio of 2 or more, the following apply: a) four−engine airplanes – 210 meters (689 feet); b) three−engine airplanes – 260 meters (853 feet); c) airplanes with fewer than three engines – 305 meters (1,000 feet). The power may not be reduced below that which will provide level flight for an engine inoperative or that will maintain a climb gradient of at least 4 percent, whichever is greater.
Chapter 3	
3.1.1	For type design change applications made after 14 August 1989, if an airplane is a Stage 3 airplane prior to a change in type design, it must remain a Stage 3 airplane after the change in type design regardless of whether Stage 3 compliance was required before the change in type design.
3.3.1 a) 2)	The U.S. has no equivalent provision in 14 CFR Part 36.
3.3.2.2	A minimum of two microphones symmetrically positioned about the test flight track must be used to define the maximum sideline noise. This maximum noise may be assumed to occur where the aircraft reaches 305 meters (1,000 feet). 14 CFR Part 36 does not require symmetrical measurements to be made at each and every point for propeller−driven airplane sideline noise determination.
3.6.2.1 c)	Under 14 CFR Part 36, during each test take−off, simultaneous measurements should be made at the sideline noise measuring stations on each side of the runway and also at the take−off noise measuring station. If test site conditions make it impractical to simultaneously measure take−off and sideline noise, and if each of the other sideline measurement requirements is met, independent measurements may be made of the sideline noise under simulated flight path techniques. If the reference flight path includes a power cutback before the maximum possible sideline noise level is developed, the reduced sideline noise level, which is the maximum value developed by the simulated flight path technique, must be the certificated sideline noise value.

3.6.2.1 d)	14 CFR Part 36 specifies the day speeds and the acoustic reference speed to be the minimum approved value of V_2 +10 kt, or the all−engines operating speed at 35 feet (for turbine−engine powered airplanes) or 50 feet (for reciprocating−engine powered airplanes), whichever speed is greater as determined under the regulations constituting the type certification basis of the airplane. The test must be conducted at the test day speeds ±3 kt.
3.7.4	If a take−off test series is conducted at weights other than the maximum take−off weight for which noise certification is requested: a) at least one take−off test must be at or above that maximum weight; b) each take−off test weight must be within +5 or −10 percent of the maximum weight. If an approach test series is conducted at weights other than the maximum landing weight for which certification is requested: a) at least one approach test must be conducted at or above that maximum weight; b) each test weight must exceed 90 percent of the maximum landing weight. Total EPNL adjustment for variations in approach flight path from the reference flight path and for any difference between test engine thrust or power and reference engine thrust or power must not exceed 2 EPNdB.
Chapter 5	
5.1.1	Applies to all large transport category aircraft (as they do to all subsonic turbo−jet aircraft regardless of category). Commuter category aircraft, propeller−driven airplanes below 8,640 kg (19,000 lb) are subject to 14 CFR Part 36, Appendix F or to Appendix G, depending upon the date of completion of the noise certification tests.
Chapter 6	
6.1.1	Applies to new, all propeller−driven airplane types below 19,000 lb (8,640 kg.) in the normal, commuter, utility, acrobatic, transport, or restricted categories for which the noise certification tests are completed before 22 December 1988.
Chapter 8	
General	14 CFR Part 36 (Section 36.1 (h)) defines Stage 1 and Stage 2 noise levels and Stage 1 and Stage 2 helicopters. These definitions parallel those used in 14 CFR Part 36 for turbo−jets and are used primarily to simplify the acoustical change provisions in Section 36.11. 14 CFR Part 36 (Section 36.805(c)) provides for certain derived versions of helicopters for which there are no civil prototypes to be certificated above the noise level limits.
8.1.1 a)	Applicable to new helicopter types for which application for an original type certificate was made on or after 6 March 1988.
8.1.1 b)	Applicable only to “acoustical changes” for which application for an amended or supplemental type certificate was made on or after 6 March 1988.
8.4	14 CFR Part 36 Appendix H specifies a slightly different rate of allowable maximum noise levels as a function of helicopter mass. The difference can lead to a difference in the calculated maximum noise limits of 0.1 EPNdB under certain roundoff condition.
8.6.3.1 b)	Does not include the V_{NE} speeds.
8.7	14 CFR Part 36 Appendix H does not permit certain negative corrections. Annex 16 has no equivalent provision.
8.7.4	EPNL correction must be less than 2.0 EPNdB for any combination of lateral deviation, height, approach angle and, in the case of flyover, thrust or power. Corrections to the measured data are required if the tests were conducted below the reference weight. Corrections to the measured data are required if the tests were conducted at other than reference engine power.
8.7.5	The rotor speed must be maintained within one percent of the normal operating RPM during the take−off procedure.
8.7.8	The helicopter shall fly within ±10° from the zenith for approach and take−off, but within ±5° from the zenith for horizontal flyover.

Chapter 10	
General	Exception from acoustical change rule given for aircraft with flight time prior to 1 January 1955 and land configured aircraft reconfigured with floats or skis.
10.1.1	Applies to new, amended, or supplemental type certificates for propeller−driven airplanes not exceeding 8,640 kg (19,000 lb) for which noise certification tests have not been completed before 22 December 1988.
10.4	The maximum noise level is a constant 73 dBA up to 600 kg (1,320 lb). Above that weight, the limit increases at the rate of 1 dBA/75kg (1 dBA/165 lb) up to 85 dBA at 1,500 kg (3,300 lb) after which it is constant up to and including 8,640 kg (19,000 lb).
10.5.2, second phase, d)	For variable−pitch propellers, the definition of engine power is different in the second segment of the reference path. Maximum continuous installed power instead of maximum power is used.
Chapter 11	
11.1	14 CFR Part 36 Appendix J was effective 11 September 1992 and applies to those helicopters for which application for a type certificate was made on or after 6 March 1986.
11.4	14 CFR Part 36 Appendix J specifies a slightly different rate of allowable maximum noise levels as a function of helicopter mass. The difference can lead to a difference in the calculated maximum noise limits of 0.1 EPNdB under certain roundoff condition.
11.6	14 CFR Part 36 Appendix J prescribes a ±15 meter limitation on the allowed vertical deviation about the reference flight path. Annex 16 has no equivalent provision.
PART V	
General	No comparable provision exists in U.S. Federal Regulations. Any local airport proprietor may propose noise abatement operating procedures to the FAA which reviews them for safety and appropriateness.
Appendix 1	
General	Sections 3, 8, and 9 of Appendix 1 which contain the technical specifications for equipment, measurement and analysis and data correction for Chapter 2 aircraft and their derivatives differ in many important aspects from the corresponding requirements in Appendix 2 which has been updated several times. 14 CFR Part 36 updates have generally paralleled those of Appendix 2 of Annex 16. These updated requirements are applicable in the U.S. to both Stage 2 and Stage 3 aircraft and their derivatives.
2.2.1	A minimum of two microphones symmetrically positioned about the test flight track must be used to define the maximum sideline noise. This maximum noise may be assumed to occur where the aircraft reaches 305 meters (1,000 feet), except for four−engine, Stage 2 aircraft for which 439 meters (1,440 feet) may be used.
2.2.2	No obstructions in the cone defined by the axis normal to the ground and the half−angle 80° from the axis.
2.2.3 c)	Relative humidity and ambient temperature over the sound path between the aircraft and 10 meters above the ground at the noise measuring site is such that the sound attenuation in the 8 kHz one−third octave band is not greater than 12 dB/100 meters and the relative humidity is between 20 and 95 percent. However, if the dew point and dry bulb temperature used for obtaining relative humidity are measured with a device which is accurate to within one−half a degree Celsius, the sound attenuation rate shall not exceed 14 dB/100 meters in the 8 kHz one−third octave band.
2.2.3 d)	Test site average wind not above 12 kt and average cross−wind component not above 7 kt.
2.3.4	The aircraft position along the flight path is related to the recorded noise 10 dB downpoints.
2.3.5	At least one take−off test must be a maximum take−off weight and the test weight must be within +5 or −10 percent of maximum certificated take−off weight.
Appendix 2	
2.2.1	A minimum of two symmetrically placed microphones must be used to define the maximum sideline noise at the point where the aircraft reaches 305 meters.

2.2.2	When a multiple layering calculation is required, the atmosphere between the airplane and the ground shall be divided into layers. These layers are not required to be of equal depth, and the maximum layer depth must be 100 meters.
2.2.2 b)	14 CFR Part 36 specifies that the lower limit of the temperature test window is 36 degrees Fahrenheit (2.2 degrees Celsius). Annex 16 provides 10 degrees Celsius as the lower limit for the temperature test window. 14 CFR Part 36 does not specify that the airport facility used to obtain meteorological condition measurements be within 2,000 meters of the measurement site.
2.2.2 c)	14 CFR Part 36 imposes a limit of 14 dB/100 meters in the 8 kHz one−third octave band when the temperature and dew point are measured with a device which is accurate to within one−half a degree Celsius.
2.2.3	14 CFR Part 36 requires that the limitations on the temperature and relative humidity test window must apply over the whole noise propagation path between a point 10 meters above the ground and the helicopter. Annex 16 specifies that the limitations on the temperature and relative humidity test window apply only at a point 10 meters above the ground. 14 CFR Part 36 requires that corrections for sound attenuation must be based on the average of temperature and relative humidity readings at 10 meters and the helicopter. Annex 16 implies that the corrections for sound absorption are based on the temperature and relative humidity measured at 10 meters only.
3.2.6	No equivalent requirement.
3.4.5	For each detector/integrator the response to a sudden onset or interruption of a constant sinusoidal signal at the respective one−third octave band center frequency must be measured at sampling times 0.5, 1.0, 1.5, and 2.0 seconds after the onset or interruption. The rising responses must be the following amounts before the steady−state level: 0.5 seconds: 4.0 ± 1.0 dB 1.0 seconds: 1.75 ± 0.75 dB 1.5 seconds: 1.0 ± 0.5 dB 2.0 seconds: 0.6 ± 0.5 dB
3.4.5 (Note 1)	No equivalent provision in 14 CFR Part 36.
3.5.2	No equivalent requirement.
5.4	14 CFR Part 36 requires that the difference between airspeed and groundspeed shall not exceed 10 kt between the 10 dB down time period.
8.4.2	14 CFR Part 36 specifies a value of −10 in the adjustment for duration correction. Annex 16 specifies a value of −7.5.
9.1.2, 9.1.3	14 CFR Part 36 always requires use of the integrated procedure if the corrected take−off or approach noise level is within 1.0 dB of the applicable noise limit.
Appendix 6	
4.4.1	The microphone performance, not its dimensions, is specified. The microphone must be mounted 1.2 meters (4 feet) above ground level. A windscreen must be employed when the wind speed is in excess of 9 km/h (5 kt).
5.2.2 a)	Reference conditions are different. Noise data outside the applicable range must be corrected to 77 degrees F and 70 percent humidity.
5.2.2 c)	There is no equivalent provision in 14 CFR Part 36. Fixed−pitch propeller−driven airplanes have a special provision. If the propeller is fixed−pitch and the test power is not within 5 percent of reference power, a helical tip Mach number correction is required.

ANNEX 16 – ENVIRONMENTAL PROTECTION	
VOLUME II – AIRCRAFT ENGINE EMISSIONS	
Chapter 1	
	The U.S. currently has regulations prohibiting intentional fuel venting from turbojet, turbofan and turboprop aircraft, but we do not now have a regulation preventing the intentional fuel venting from helicopter engines.

ANNEX 17 – SECURITY – SAFEGUARDING INTERNATIONAL CIVIL AVIATION AGAINST ACTS OF UNLAWFUL INTERFERENCE
There are no reportable differences between U.S. regulations and the Standards and Recommended Practices contained in this Annex.

ANNEX 18 – THE SAFE TRANSPORT OF DANGEROUS GOODS BY AIR
There are no reportable differences between U.S. regulations and the Standards and Recommended Practices contained in this Annex.

ANNEX 19 – SAFETY MANAGEMENT	
Chapter 3	**State Safety Management Responsibilities**
3.3.2.1	U.S. does not currently require the implementation of SMS for: – approved training organizations that are exposed to safety risks related to aircraft operations during the provision of their services; – approved maintenance organizations providing services to operators of aeroplanes or helicopters engaged in international commercial air transport. U.S. does require the implementation of SMS for: – organizations responsible for type design that hold a production certificate for the same product; – operators of certain aerodromes that do not satisfy criteria in 14 CFR § 139.401.
3.3.2.3	The U.S. has not established criteria for international general aviation operators of large or turbojet aeroplanes to implement an SMS.

PANS – OPS – 8168/611	
VOLUME I – Flight Procedures	
PART III	
Table III−1−1 and Table III−1−2	Max speeds for visual maneuvering (Circling)" must not be applied to circling procedures in the U.S. Comply with the airspeeds and circling restrictions in ENR 1.5, paragraphs 11.1 and 11.6, in order to remain within obstacle protection areas.
PART IV	
1.2.1	The airspeeds contained in ENR 1.5 shall be used in U.S. **CONTROLLED AIRSPACE**.
VOLUME II – Construction of Visual and Instrument Flight Procedures	
In toto	The United States does not construct Visual nor Instrument Flight Procedures per Volume II. The U.S. constructs Visual and Instrument Flight Procedures following the cited FAA Orders 8260.3, 8260.19, 8260.46, 8260.58, and 8260.61.
In toto	See ENR 1.5−6 Approach Clearance. Feeder routes may connect an instrument approach to the en route structure.
PART I	
Section 2 – General Principles	
Chapter 1	
1.1.4d	See ENR 1.5−3.1 Standard Terminal Arrival (STAR) Procedures and 1.5−35 Departure Control. The United States has En Route Transitions promulgated on SIDs and STARs that facilitate transitions between en route and instrument flight procedures.
Section 4 – Arrival and Approach Procedures	
Chapter 5	
5.4.1.5	See ENR 1.5−11 Approach and Landing Minimums. The United States publishes landing minima on instrument approach charts.
5.4.6.1	See ENR 1.5−12.9. Obstacles may penetrate the visual segment surface.
Chapter 7	
7.3	See ENR 1.5−11 Approach and Landing Minimums. The United States uses a minimum obstacle clearance of 300' instead of 394' for CAT C and D circling minima.
Appendix (to Chapter 7)	See ENR 1.5−26 Charted Visual Flight Procedures (CVFPs). The United States publishes CVFPs instead of Visual Maneuvering using Prescribed Track and provides no minimum obstacle clearance assurance.
Chapter 10	
10.1.1	See ENR 1.5−10 Side−step Maneuver. The United States may authorize a side−step maneuver to transition from the final approach course aligned to one runway to land on a parallel runway.

Part III	
Section 5 – Publication	
Chapter 1	
1.4.2.3	See ENR 1.5−9.2 for RNP AR APCH, 12.13 for RNP APCH. The United States naming convention for RNP APCH approaches is ”RNAV (GPS) RWY ##”. The naming convention for RNP AR APCH approaches is ”RNAV (RNP) RWY ##”.
Part IV	
In toto	See ENR 1.5−12.8 Visual Descent Point (VDP). The United States may publish a VDP on a nonprecision approach where a pilot can make a stabilized descent from the MDA. Volume II, Part IV does not contain an equivalent provision.
VOLUME III – Aircraft Operating Procedures	
Section 3 – Simultaneous operations on parallel or near−parallel instrument runways	
1.5c3	The United States does not require the final vector to final to enable the aircraft to be established on the final approach course track, in level flight for at least 3.7 km (2.0NM) prior to intercepting the glide path or vertical path for the selected instrument approach procedure. FAA Order JO 7110.65 requires that when conducting dual or triple simultaneous independent approaches the aircraft is cleared to descend to the appropriate glideslope/glidepath intercept altitude soon enough to provide a period of level flight to dissipate excess speed. Also, the aircraft must be provided at least 1 mile of straight flight prior to the final approach course intercept.
Section 10 – Flight Tracking	
1.2.1	The United States has notified differences to the distress tracking standards in Annex 6, Part I, 6.18. Consistent with those differences, the United States does not require U.S. operators to establish training programs and procedures specific to autonomous distress tracking and will not perform surveillance of implementation by U.S. operators.
1.2.2	FAA Order JO 7210.632, Air Traffic Organization Occurrence Reporting, establishes mandatory occurrence reporting (MOR) requirements and format for FAA employees, including reports sourced from operators and missed position reporting. The MOR Report form includes most, but not all, of the template in the Appendix to Ch. 1.
1.2.3	The United States has notified differences to the distress tracking standards in Annex 6, Part I, 6.18. Consistent with those differences, the United States does not require U.S. operators to maintain contact details in the ICAO OPS CTRL.annex 6

PAN – ABC – DOC 8400
Differences between abbreviations used in U.S. AIP, International NOTAMs Class I and Class II, and Notices to Airmen Publication and ICAO PANS − ABC are listed in GEN 2.2**.** For other U.S. listings of abbreviations (contractions) for general use, air traffic control, and National Weather Service (NWS), which differ in some respects, see U.S. publication Contractions Handbook (FAA Order JO 7340.2). In addition, various U.S. publications contain abbreviations of terms used therein, particularly those unique to that publication.

GEN 2. TABLES AND CODES

GEN 2.1 Measuring System, Aircraft Markings, and Holidays

1. Units of Measurement

1.1 The following table identifies the units of measurement that have been selected for use in messages transmitted by all U.S. aeronautical stations, in the U.S. AIP, NOTAM dissemination, and other publications.

2. Time System

2.1 Coordinated Universal Time (UTC) is used in the Air Traffic and Communication services provided and in most documents published by the Aeronautical Information Services.

2.2 When local mean time is used, it will be so indicated as local standard time (LST). See FIG GEN 2.1–1 for a depiction of the standard time zones within the continental U.S.

3. Geodetic Reference Datum

3.1 All published geographic coordinates indicating latitude and longitude are expressed in terms of the World Geodetic System – 1984 (WGS–84) geodetic reference datum.

4. Vertical Reference System

4.1 The U.S. utilizes Geoid–03, which is a component of the North American Vertical Datum of 1988 (NAVD 88).

5. Aircraft Nationality and Registration Marks

5.1 The nationality mark for the aircraft registered in the U.S. is the letter N, followed by a series of numbers or a series of numbers and letters.

6. Public Holidays

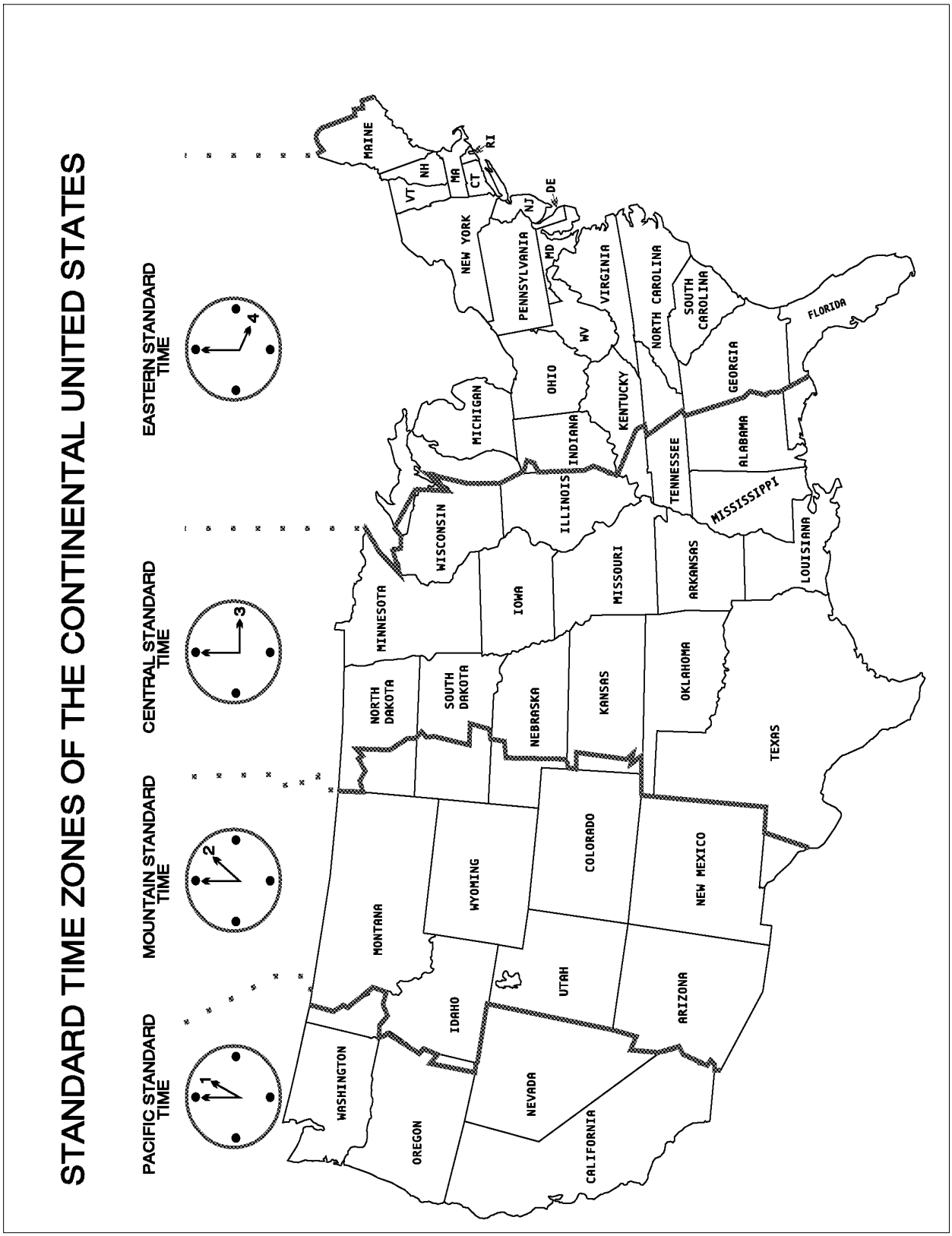
6.1 A list of US public holidays can be found at www.usa.gov/holidays. Aviation services remain available during holidays.

TBL GEN 2.1–1

For Measurements of:	Units used:
Distance used in navigation, position reporting, etc. – generally in excess of 2 to 3 nautical miles	Nautical miles and tenths
Relatively short distances such as those relating to aerodrome (e.g., runway lengths)	Feet
Altitudes, elevations and heights	Feet
Horizontal speed, including wind speed	Knots
Vertical speed	Feet per minute
Wind direction for landing and taking off	Degrees magnetic

Wind direction except for landing and taking off	Degrees true
Visibility, including runway visual	Statute miles or feet
Altimeter Setting	Inches of mercury
Temperature	Degrees Fahrenheit
Weight	Pounds
Time	Hours and minutes, the day of 24 hours beginning at midnight Coordinated Universal Time

FIG GEN 2.1–1


STANDARD TIME ZONES OF THE CONTINENTAL UNITED STATES
PACIFIC STANDARD TIME
MOUNTAIN STANDARD TIME
CENTRAL STANDARD TIME
EASTERN STANDARD TIME
1
2
3
4
WASHINGTON
OREGON
CALIFORNIA
NEVADA
IDAHO
MONTANA
WYOMING
UTAH
ARIZONA
COLORADO
NEW MEXICO
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
ILLINOIS
MICHIGAN
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WV
PENNSYLVANIA
NEW YORK
MD
DE
NJ
CT
RI
MA
VT
NH
MAINE

INTL	international
INTST	intensity
IRU	Inertial Reference Unit
J	
J–bar	jet runway barrier
K	
KHZ	kilohertz
L	
L	left (used only to designate rwys; e.g., rwy 12L)
ICAO:	L – left/runway identification/locator
LAANC	Low Altitude Authorization and Notification Capability
LAT	latitude
LB	pounds (weight)
LCTD	located
LDA	localizer type directional aid
ICAO:	LDA – landing distance available LLZ – localizer
LGTD	lighted
LMM	compass locator at ILS middle marker
LNDG	landing
ICAO:	LDG – landing
LOC	localizer
ICAO:	LOC–localizer or locally or location or located
LOM	compass locator at ILS outer marker
LONG	longitude
LRCO	limited remote communications outlet
M	
MAA	maximum authorized altitude
MAG	magnetic
MAINT	maintain, maintenance
ICAO:	MNTN – maintain; MAINT – maintenance
MALS	medium intensity approach light system
MALSR	medium intensity approach light system with runway alignment indicator lights
MAP	missed approach point
ICAO:	MAP – aeronautical maps and charts
MAX	maximum
MCA	minimum crossing altitude
MDA	minimum descent altitude
MEA	minimum en route IFR altitude
MGOW	Maximum Gross Operating Weight
MHZ	megahertz
MIN	minimum or minute
MIRL	medium intensity runway edge lights
MM	middle marker ILS
MOCA	minimum obstruction clearance altitude
MRA	minimum reception altitude
MSA	minimum safe altitude
MSL	mean sea level
MUNI	municipal
N	
N	north
NA	not authorized
NATL	national
NAVAID	navigational aid
NDB	nondirectional radio beacon
NM	nautical mile(s)
NOPT	no procedure turn required
NR	number
O	
OBSTN	obstruction
OCA	Oceanic Control Area
ODALS	omnidirectional approach lighting system
OM	outer marker ILS
OOP	Operations Over People
OPER	operate
OPN	operation
ICAO:	OPR – operator/operate/operative/ operating/operational
ORIG	original
OTS	out of service
OVRN	overrun
P	
PAO	Public Aircraft Operation
PAR	precision approach radar
PAT	pattern
PBCS	Performance–Based Communication and Surveillance
PCN	pavement classification number
PERMLY	permanently
PIC	Pilot–in–Command
POB	persons on board
PPR	prior permission required
PROC	procedure

Q	
QUAD	quadrant
R	
R	right (used only to designate rwys; e.g., rwy 19R)
ICAO:	R − received (acknowledgement of receipt)/red/restricted area (followed by identification)/right (runway identification)
RADAR	radio detection and ranging
RAPCON	Radar Approach Control facility (USAF, USN and USMC)
RATCF	Radar Air Traffic Control Facility (USN and USMC)
RC	Radio−Controlled
RCAG	remote center air/ground
RCLS	runway centerline lights system
ICAO:	RCL − runway centerline
RCO	remote communications outlet
RCV	receive
RCVG	receiving
REIL	runway end identifier lights
REQ	request
RID	Remote Identification
RNAV	area navigation
RPIC	Remote Pilot−in−Command
RRP	runway reference point
REL	runway entrance lights
RLLS	Runway Lead−in Light System
RSTRD	restricted
RTS	returned to service
RVR	runway visual range
RVRM	runway visual range midpoint
RVRR	runway visual range rollout
RVRT	runway visual range touchdown
RWSL	runway status light
RWY	runway
ICAO:	RWY−runway
S	
S	runway weight bearing capacity for aircraft with single−wheel type landing gear
S	south
ICAO:	S − south/south latitude
SAA	Sense and Avoid
SDF	simplified directional facility
SEC	second
SFC	surface
SFL	sequenced flashing lights
SGI	Special Government Interest
SI	straight−in approach
ICAO:	STA − straight−in approach
SM	statute mile(s)
SR	sunrise
SS	sunset
ICAO:	SS − sandstorm
SSALF	simplified short approach lighting system with sequenced flashers
SSALR	simplified short approach lighting system with runway alignment indicator lights
SSALS	simplified short approach lighting system
STOL	short take−off and landing runway
ICAO:	STOL − short takeoff and landing
sUAS	Small UAS
SVC	service
ICAO:	SVC − service message
T	
T	true (after a bearing)
ICAO:	T − temperature
TAC	terminal area chart
TACAN	UHF navigational facility − omnidirectioal course and distance information
ICAO:	TACAN − VHF tactical navigational aid
TAS	true air speed
TCH	threshold crossing height
ICAO:	TEMPO − Temporary/temporarily
TFC	traffic
THL	takeoff hold lights
THR	threshold
THRU	through
ICAO:	THRU − through/I am connecting you to another switchboard
TKOF	take−off
TEMPRLY	temporarily
ICAO:	TMA − TERMINAL CONTROL AREA
TMPRY	temporary/temporarily
TPA	traffic pattern altitude

TBL GEN 2.6–3

INTERNATIONAL NAUTICAL MILES TO STATUTE MILES										
1 nautical mile = 6,076.10 feet or 1,852 meters 1 statute mile = 5,280 feet or 1,609.35 meters										
NM	0	1	2	3	4	5	6	7	8	9
0	0.000	1.151	2.302	3.452	4.603	5.754	6.905	8.055	9.206	10.357
10	11.508	12.659	13.809	14.960	16.111	17.262	18.412	19.563	20.714	21.865
20	23.016	24.166	25.317	26.468	27.619	28.769	29.920	31.071	32.222	33.373
30	34.523	35.674	36.825	37.976	39.126	40.277	41.428	42.579	43.730	44.880
40	46.031	47.182	48.333	49.483	50.634	51.785	52.936	54.087	55.237	56.388
50	57.539	58.690	59.840	60.991	62.142	63.293	64.444	65.594	66.745	67.896
60	69.047	70.197	71.348	72.499	73.650	74.801	75.951	77.102	78.253	79.404
70	80.554	81.705	82.856	84.007	85.158	86.308	87.459	88.610	89.761	90.911
80	92.062	93.213	94.364	95.515	96.665	97.816	98.967	100.118	101.268	102.419
90	103.570	104.721	105.871	107.022	108.173	109.324	110.475	111.625	112.776	113.927

TBL GEN 2.6–4

STATUTE MILES TO INTERNATIONAL NAUTICAL MILES										
SM	0	1	2	3	4	5	6	7	8	9
0	0.000	0.869	1.738	2.607	3.476	4.345	5.214	6.083	6.952	7.821
10	8.690	9.559	10.428	11.297	12.166	13.035	13.904	14.773	15.642	16.511
20	17.380	18.249	19.118	19.986	20.855	21.724	22.593	23.462	24.331	25.200
30	26.069	26.938	27.807	28.676	29.545	30.414	31.283	32.152	33.021	33.890
40	34.759	35.628	36.497	37.366	38.235	39.104	39.973	40.482	41.711	42.580
50	43.449	44.318	45.187	46.056	46.925	47.794	48.663	49.532	50.401	51.270
60	52.139	53.008	53.877	54.746	55.615	56.484	57.353	58.222	59.091	59.959
70	60.828	61.697	62.566	63.435	64.304	65.173	66.042	66.911	67.780	68.649
80	69.518	70.387	71.256	72.125	72.994	73.863	74.732	75.601	76.470	77.339
90	78.208	79.077	79.946	80.815	81.684	82.553	83.422	84.291	85.160	86.029

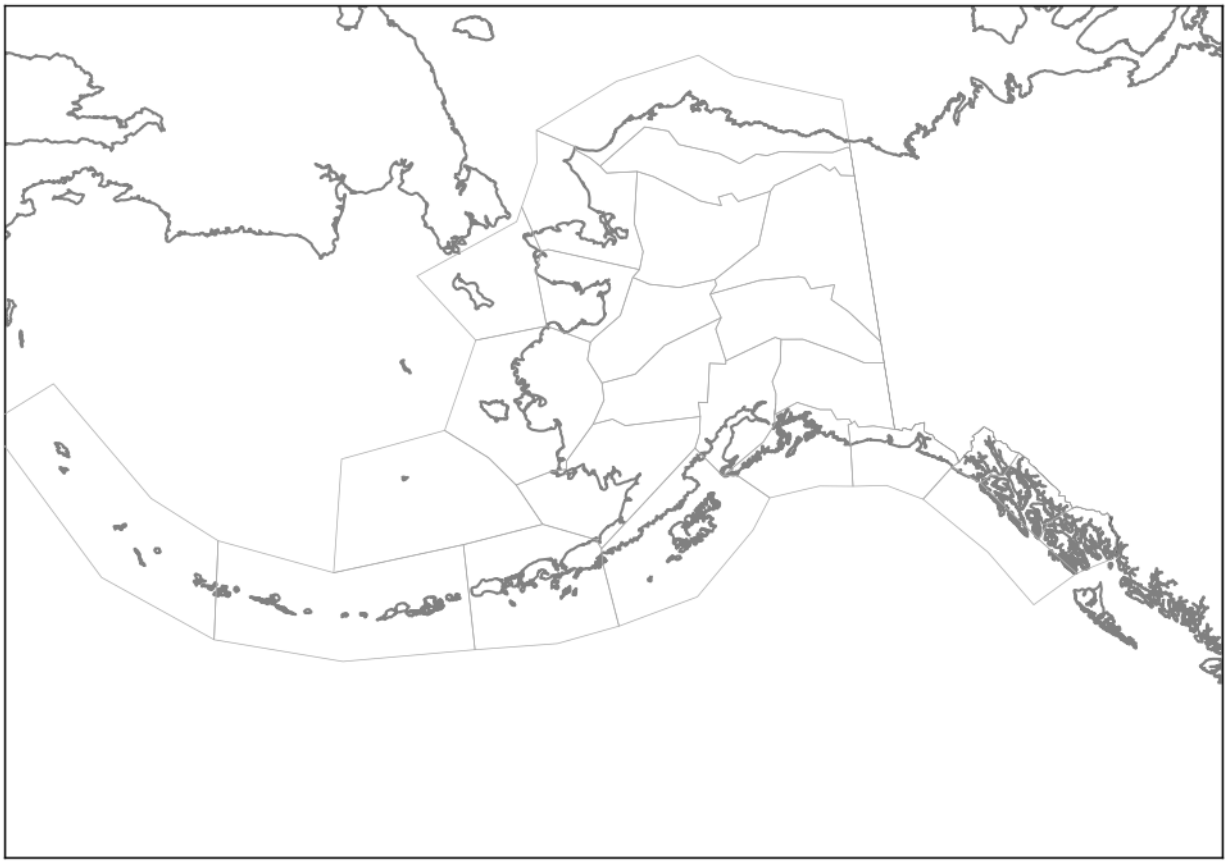
TBL GEN 2.6−5

CONVERSION TABLE										
NM	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
0	0	608	1215	1823	2430	3038	3646	4253	4861	5469
1	6076	6684	7291	7899	8507	9114	9722	10329	10937	11545
2	12152	12760	13367	13975	14583	15190	15798	16406	17013	17621
3	18228	18836	19444	20051	20659	21266	21874	22482	23089	23697
4	24304	24912	25520	26127	26735	27343	27950	28558	29165	29773
5	30381	30988	31596	32203	32811	33419	34026	34634	35241	35849
6	36457	37064	37672	38280	38887	39495	40102	40710	41318	41925
7	42533	43140	43748	44356	44963	45571	46178	46786	47394	48001
8	48609	49217	49824	50432	51039	51647	52255	52862	53470	54077
9	54685	55293	55900	56508	57115	57723	58331	58938	59546	60154

TBL GEN 2.6−6

CONVERSION TABLE − ft/NM										
ft	0	1	2	3	4	5	6	7	8	9
0	0	0.016	0.033	0.049	0.066	0.082	0.099	0.115	0.132	0.148
1000	0.165	0.181	0.197	0.214	0.230	0.247	0.263	0.280	0.296	0.313
2000	0.329	0.346	0.362	0.379	0.395	0.411	0.428	0.444	0.461	0.477
3000	0.494	0.510	0.527	0.543	0.560	0.576	0.593	0.609	0.625	0.642
4000	0.658	0.675	0.691	0.708	0.724	0.741	0.757	0.774	0.790	0.806
5000	0.823	0.839	0.856	0.872	0.889	0.905	0.922	0.938	0.955	0.971
6000	0.988	1.004	1.020	1.037	1.053	1.070	1.086	1.103	1.119	1.136
7000	1.152	1.169	1.185	1.202	1.218	1.234	1.251	1.267	1.284	1.300
8000	1.317	1.333	1.350	1.366	1.383	1.399	1.416	1.432	1.448	1.465
9000	1.481	1.498	1.514	1.531	1.547	1.564	1.580	1.597	1.613	1.629
	0	1000	2000	3000	4000	5000	6000	7000	8000	9000
10000	1.646	1.811	1.975	2.140	2.304	2.469	2.634	2.798	2.963	3.127
20000	3.292	3.457	3.621	3.786	3.950	4.115	4.280	4.444	4.609	4.773
30000	4.938	5.103	5.267	5.432	5.596	5.761	5.926	6.090	6.255	6.419
40000	6.584	6.749	6.913	7.078	7.242	7.407	7.572	7.736	7.901	8.065
50000	8.230	8.395	8.559	8.724	8.888	9.053	9.218	9.382	9.547	9.711

FIG GEN 3.5–4
Alaska SIGMET and Area Forecast Zones



3.9.4.4 SIGMETs over oceanic regions (New York Oceanic FIR, Oakland Oceanic FIR including Hawaii, Houston Oceanic FIR, Miami Oceanic FIR, San Juan FIR), points of latitude and longitude are used to describe the hazard area.

a) SIGMETs over the Oakland Oceanic FIR west of 140 west and south of 30 north (including the Hawaiian Islands), are identified by an alphabetic designator from November through Zulu.

b) SIGMETs over the Oakland Oceanic FIR east of 140 west and north of 30 north are identified by an alphabetic designator from Alpha through Mike.

c) SIGMETs over the New York Oceanic FIR, Houston Oceanic FIR, Miami Oceanic FIR, and San Juan FIR are identified by an alphabetic designator from Alpha through Mike.

d) In addition to SIGMETs issued for the phenomenon for the contiguous U.S., SIGMETs in the oceanic regions are also issued for:

1) Tornadoes.

2) Lines of thunderstorms.

3) Embedded thunderstorms.

4) Hail greater than or equal to ¾ inch in diameter.

3.9.5 Convective SIGMET

3.9.5.1 Convective SIGMETs are issued in the conterminous U.S. for any of the following:

a) Severe thunderstorm due to:

1) Surface winds greater than or equal to 50 knots.

2) Hail at the surface greater than or equal to $^{3}/_{4}$ inches in diameter.

3) Tornadoes.

b) Embedded thunderstorms.

c) A line of thunderstorms.

d) Thunderstorms producing precipitation greater than or equal to heavy precipitation affecting 40 percent or more of an area at least 3,000 square miles.

3.9.5.2 Any convective SIGMET implies severe or greater turbulence, severe icing, and low−level wind shear. A convective SIGMET may be issued for any convective situation that the forecaster feels is hazardous to all categories of aircraft.

3.9.5.3 Convective SIGMET bulletins are issued for the western (W), central (C), and eastern (E) United States. (Convective SIGMETs are not issued for Alaska or Hawaii.) The areas are separated at 87 and 107 degrees west longitude with sufficient overlap to cover most cases when the phenomenon crosses the boundaries. Bulletins are issued hourly at H+55. Special bulletins are issued at any time as required and updated at H+55. If no criteria meeting convective SIGMET requirements are observed or forecasted, the message "CONVECTIVE SIGMET... NONE" will be issued for each area at H+55. Individual convective SIGMETs for each area (W, C, E) are numbered sequentially from number one each day, beginning at 00Z. A convective SIGMET for a continuing phenomenon will be reissued every hour at H+55 with a new number. The text of the bulletin consists of either an observation and a forecast or just a forecast. The forecast is valid for up to 1 hour.

EXAMPLE−
CONVECTIVE SIGMET 44C
VALID UNTIL 1455Z
AR TX OK
FROM 40NE ADM-40ESE MLC-10W TXK-50WNW LFK-40ENE SJT-40NE ADM
AREA TS MOV FROM 26025KT. TOPS ABV FL450.

TBL GEN 3.5−14
TWIP−Equipped Airports

Airport	Identifier
Andrews AFB, MD	KADW
Hartsfield−Jackson Atlanta Intl Airport	KATL
Nashville Intl Airport	KBNA
Logan Intl Airport	KBOS
Baltimore/Washington Intl Airport	KBWI
Hopkins Intl Airport	KCLE
Charlotte/Douglas Intl Airport	KCLT
Port Columbus Intl Airport	KCMH
Cincinnati/Northern Kentucky Intl Airport	KCVG
Dallas Love Field Airport	KDAL
James M. Cox Intl Airport	KDAY
Ronald Reagan Washington National Airport	KDCA
Denver Intl Airport	KDEN
Dallas−Fort Worth Intl Airport	KDFW
Detroit Metro Wayne County Airport	KDTW
Newark Liberty Intl Airport	KEWR
Fort Lauderdale−Hollywood Intl Airport	KFLL
William P. Hobby Airport	KHOU
Washington Dulles Intl Airport	KIAD
George Bush Intercontinental Airport	KIAH
Wichita Mid−Continent Airport	KICT
Indianapolis Intl Airport	KIND
John F. Kennedy Intl Airport	KJFK

Airport	Identifier
Harry Reid Intl Airport	KLAS
LaGuardia Airport	KLGA
Kansas City Intl Airport	KMCI
Orlando Intl Airport	KMCO
Midway Intl Airport	KMDW
Memphis Intl Airport	KMEM
Miami Intl Airport	KMIA
General Mitchell Intl Airport	KMKE
Minneapolis St. Paul Intl Airport	KMSP
Louis Armstrong New Orleans Intl Airport	KMSY
Will Rogers World Airport	KOKC
O'Hare Intl Airport	KORD
President Donald J. Trump Intl	KDJT
Philadelphia Intl Airport	KPHL
Phoenix Sky Harbor Intl Airport	KPHX
Pittsburgh Intl Airport	KPIT
Raleigh−Durham Intl Airport	KRDU
Louisville Intl Airport	KSDF
Salt Lake City Intl Airport	KSLC
Lambert−St. Louis Intl Airport	KSTL
Tampa Intl Airport	KTPA
Tulsa Intl Airport	KTUL
Luis Munoz Marin Intl Airport	TJSJ

25. PIREPs Relating to Volcanic Ash Activity

25.1 Volcanic eruptions which send ash into the upper atmosphere occur somewhere around the world several times each year. Flying into a volcanic ash cloud can be exceedingly dangerous. At least two B747s have lost all power in all four engines after such an encounter. Regardless of the type aircraft, some damage is almost certain to ensue after an encounter with a volcanic ash cloud. Additionally, studies have shown that volcanic eruptions are the only significant source of large quantities of sulphur dioxide (SO_2) gas at jet-cruising altitudes. Therefore, the detection and subsequent reporting of SO_2 is of significant importance. Although SO_2 is colorless, its presence in the atmosphere should be suspected when a sulphur-like or rotten egg odor is present throughout the cabin.

25.2 While some volcanoes in the U.S. are monitored, many in remote areas are not. These unmonitored volcanoes may erupt without prior warning to the aviation community. A pilot observing a volcanic eruption who has not had previous notification of it may be the only witness to the eruption. Pilots are strongly encouraged to transmit a PIREP regarding volcanic eruptions and any observed volcanic ash clouds or detection of sulphur dioxide (SO_2) gas associated with volcanic activity.

25.3 Pilots should submit PIREPs regarding volcanic activity using the Volcanic Activity Reporting form (VAR) as illustrated in FIG GEN 3.5−31. (If a VAR form is not immediately available, relay enough information to identify the position and type of volcanic activity.)

25.4 Pilots should verbally transmit the data required in items 1 through 8 of the VAR as soon as possible. The data required in items 9 through 16 of the VAR should be relayed after landing, if possible.

26. Thunderstorms

26.1 Turbulence, hail, rain, snow, lightning, sustained updrafts and downdrafts, and icing conditions are all present in thunderstorms. While there is some evidence that maximum turbulence exists at the middle level of a thunderstorm, recent studies show little variation of turbulence intensity with altitude.

26.2 There is no useful correlation between the external visual appearance of thunderstorms and the severity or amount of turbulence or hail within them. Also, the visible thunderstorm cloud is only a portion of a turbulent system whose updrafts and downdrafts often extend far beyond the visible storm cloud. Severe turbulence can be expected up to 20 miles from severe thunderstorms. This distance decreases to about 10 miles in less severe storms. These turbulent areas may appear as a well−defined echo on weather radar.

26.3 Weather radar, airborne or ground−based, will normally reflect the areas of moderate to heavy precipitation. (Radar does not detect turbulence.) The frequency and severity of turbulence generally increases with the areas of highest liquid water content of the storm. NO FLIGHT PATH THROUGH AN AREA OF STRONG OR VERY STRONG RADAR ECHOES SEPARATED BY 20−30 MILES OR LESS MAY BE CONSIDERED FREE OF SEVERE TURBULENCE.

26.4 Turbulence beneath a thunderstorm should not be minimized. This is especially true when the relative humidity is low in any layer between the surface and 15,000 feet. Then the lower altitudes may be characterized by strong out−flowing winds and severe turbulence.

26.5 The probability of lightning strikes occurring to aircraft is greatest when operating at altitudes where temperatures are between −5 C and +5 C. Lightning can strike aircraft flying in the clear in the vicinity of a thunderstorm.

26.6 Current weather radar systems are able to objectively determine precipitation intensity. These precipitation intensity areas are described as “light,” “moderate,” “heavy,” and “extreme.”

REFERENCE−
Pilot/Controller Glossary Term− Precipitation Radar Weather Descriptions.

EXAMPLE−
Alert provided by an ATC facility to an aircraft:
(aircraft identification) EXTREME precipitation between ten o’clock and two o’clock, one five miles. Precipitation area is two five miles in diameter.

EXAMPLE−
Alert provided by an FSS:
(aircraft identification) EXTREME precipitation two zero miles west of Atlanta V−O−R, two five miles wide, moving east at two zero knots, tops flight level three niner zero.

27. Thunderstorm Flying

27.1 Thunderstorm Avoidance. Never regard any thunderstorm lightly, even when radar echoes are of light intensity. Avoiding thunderstorms is the best policy. Following are some Do’s and Don’ts of thunderstorm avoidance:

27.1.1 Don’t land or takeoff in the face of an approaching thunderstorm. A sudden gust front of low−level turbulence could cause loss of control.

27.1.2 Don’t attempt to fly under a thunderstorm even if you can see through to the other side. Turbulence and wind shear under the storm could be disastrous.

ENR 1. GENERAL RULES AND PROCEDURES

ENR 1.1 General Rules

1. Differences between National and International Rules and Procedures

1.1 The air traffic rules and procedures applicable to air traffic in U.S. Class A, B, C, D and E airspace conform with Annexes 2 and 11 to the Convention on International Civil Aviation and to those portions applicable to aircraft in the Procedures for Air Navigation Services – Rules of the Air and Air Traffic Services (Doc 4444 – RAC/501/10) and to the Regional Supplementary Procedures (DOC 7030) applicable to the NAM, NAT, CAR and PAC Regions, except as noted in the cases below. All differences have been registered with the International Civil Aviation Organization.

1.1.1 Annex 2 – Rules of the Air

NOTE–
See GEN 1.7.

1.1.2 Annex 11 – Air Traffic Services

NOTE–
See GEN 1.7.

1.1.3 Procedures for Air Navigation Services – Rules of the Air (DOC 4444) and Air Traffic Services (RAC/501/10)

NOTE–
See GEN 1.7.

1.1.4 Regional Supplementary Procedures (Doc 7030)

NOTE–
See GEN 1.7.

2. Airport Operations

2.1 General

2.1.1 Increased traffic congestion, aircraft in climb and descent attitudes, and pilots preoccupation with cockpit duties are some factors that increase the hazardous accident potential near the airport. The situation is further compounded when the weather is marginal; that is, just meeting VFR requirements. Pilots must be particularly alert when operating in the vicinity of an airport. This section defines some rules, practices, and procedures that pilots should be familiar with, and adhere to, for safe airport operations.

2.1.2 Each airport operator regularly serving scheduled air carriers has put into use security measures designed to prevent or deter unauthorized persons from having access to “Air Operations Area.” The “Air Operations Area” means any area of the airport used or intended to be used for landing, takeoff, or surface maneuvering of aircraft. Pilots are encouraged to obtain airport security instructions by posted signs or radio communication.

3. Airports With an Operating Control Tower

3.1 Towers have been established to provide for a safe, orderly, and expeditious flow of traffic on and in the vicinity of an airport. When the responsibility has been so delegated, towers also provide for the separation of IFR aircraft in the terminal areas (Approach Control).

3.2 When operating at an airport where traffic control is being exercised by a control tower, pilots are required to maintain two–way radio contact with the tower while operating within the Class B, Class C, and Class D

surface area unless the tower authorizes otherwise. Initial callup should be made about 15 miles from the airport. Unless there is a good reason to leave the tower frequency before exiting the Class B, Class C, and Class D surface area, it is a good operating practice to remain on the tower frequency for the purpose of receiving traffic information. In the interest of reducing tower frequency congestion, pilots are reminded that it is not necessary to request permission to leave the tower frequency once outside of Class B, Class C, and Class D surface area. Not all airports with an operating control tower will have Class D airspace. These airports do not have weather reporting which is a requirement for surface–based controlled airspace, previously known as a control zone. The controlled airspace over these airports will normally begin at 700 feet or 1,200 feet above ground level and can be determined from the visual aeronautical charts. Pilots are expected to use good operating practices and communicate with the control tower as described in this section.

3.3 When necessary, the tower controller will issue clearances or other information for aircraft to generally follow the desired flight path (traffic pattern) when flying in the Class D airspace, and the proper taxi routes when operating on the ground. If not otherwise authorized or directed by the tower, pilots approach to land in an airplane must circle the airport to the left, and pilots approaching to land in a helicopter must avoid the flow of fixed–wing traffic. However, an appropriate clearance must be received from the tower before landing.

3.4 The following terminology for the various components of a traffic pattern has been adopted as standard for use by control towers and pilots:

3.4.1 Upwind leg. A flight path that begins after departure and continues straight ahead along the extended runway centerline. Upwind leg is an extension of departure and is used when issuing control instructions for separation, spacing, or sequencing.

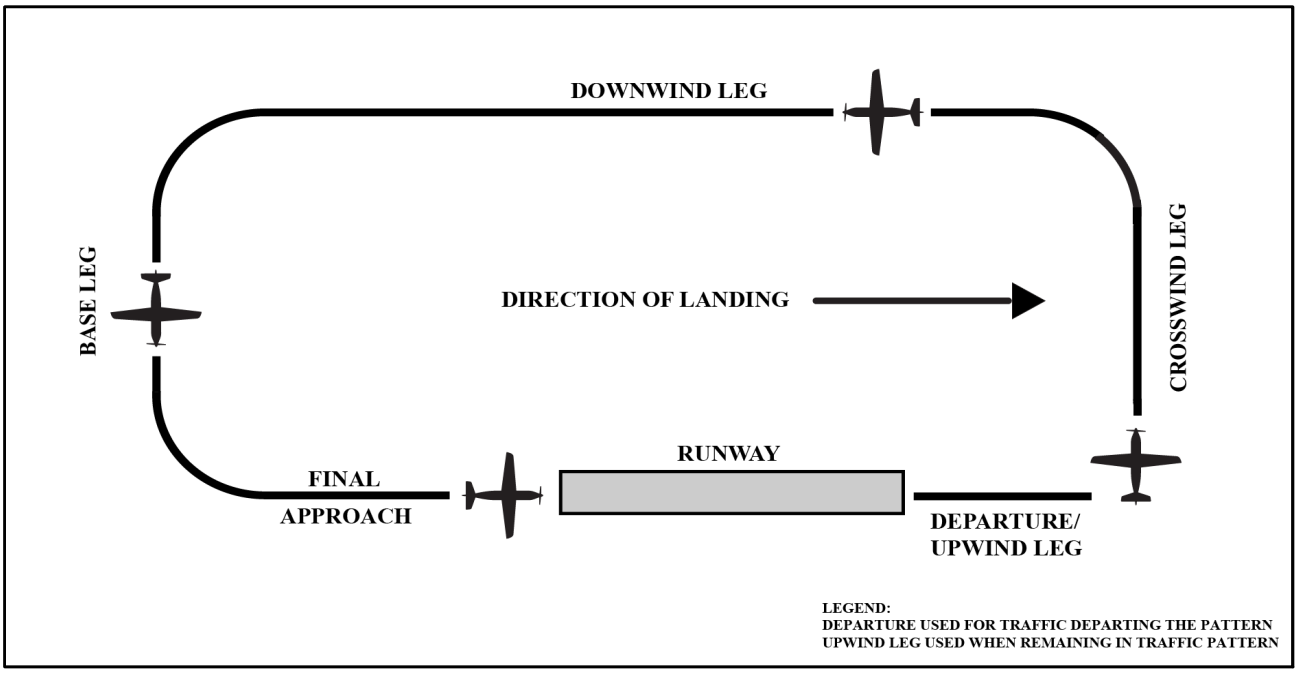
3.4.2 Crosswind leg. A flight path at right angles to the landing runway off its takeoff end.

3.4.3 Downwind leg. A flight path parallel to the landing runway in the opposite direction of landing.

3.4.4 Base leg. A flight path at right angles to the landing runway off its approach end and extending from the downwind leg to the intersection of the extended runway centerline.

3.4.5 Final approach. A flight path in the direction of landing along the extended runway centerline from the base leg to the runway.

FIG ENR 1.1–1
Components of a Traffic Pattern



NOTE−
FIG ENR 1.1−1 is intended only to illustrate terminology used in identifying various components of a traffic pattern. It should not be used as a reference or guide on how to enter a traffic pattern.

3.5 Many towers are equipped with a tower radar display. The radar uses are intended to enhance the effectiveness and efficiency of the local control, or tower, position. They are not intended to provide radar services or benefits to pilots except as they may accrue through a more efficient tower operation. The four basic uses are:

3.5.1 To determine an aircraft's exact location. This is accomplished by radar identifying the VFR aircraft through any of the techniques available to a radar position; such as, having the aircraft ident. Once identified, the aircraft's position and spatial relationship to other aircraft can be quickly determined, and standard instructions regarding VFR operation in the aircraft traffic area will be issued. Once initial radar identification of a VFR aircraft has been established and the appropriate instructions have been issued, radar monitoring may be discontinued; the reason being that the local controller's primary means of surveillance in VFR conditions is usually scanning the airport and local area.

3.5.2 To provide radar traffic advisories. Radar traffic advisories may be provided to the extent that the local controller is able to monitor the radar display. Local control has primary control responsibilities to the aircraft operating on the runways which will normally supersede radar monitoring duties.

3.5.3 To provide a direction or suggested heading. The local controller may provide pilots flying VFR with generalized instructions which will facilitate operations; e.g., "PROCEED SOUTHWEST BOUND, ENTER A RIGHT DOWNWIND RUNWAY THREE ZERO;" or provide a suggested heading to establish radar identification or as an advisory aid to navigation; e.g., "SUGGESTED HEADING TWO TWO ZERO, FOR RADAR IDENTIFICATION." In both cases, the instructions are advisory aids to the pilot flying VFR and are not radar vectors. PILOTS HAVE COMPLETE DISCRETION REGARDING ACCEPTANCE OF THE SUGGESTED HEADING OR DIRECTION AND HAVE SOLE RESPONSIBILITY FOR SEEING AND AVOIDING OTHER AIRCRAFT.

3.5.4 To provide information and instructions to aircraft operating within Class D airspace. In an example of this situation, the local controller would use the radar to advise a pilot on an extended downwind when to turn base leg.

NOTE−
The above tower radar applications are intended to augment the standard functions of the local control position. There is no controller requirement to maintain constant radar identification and, in fact, such a requirement could compromise the local controller's ability to visually scan the airport and local area to meet FAA responsibilities to the aircraft operating on the runways and within Class D airspace. Normally, pilots will not be advised of being in radar contact since that continued status cannot be guaranteed and since the purpose of the radar identification is not to establish a link for the provision of radar services.

3.6 A few of the radar−equipped towers are authorized to use the radar to ensure separation between aircraft in specific situations, while still others may function as limited radar approach controls. The various radar uses are strictly a function of FAA operational need. The facilities may be indistinguishable to pilots since they are all referred to as tower and no publication lists the degree of radar use. THEREFORE, WHEN IN COMMUNICATION WITH A TOWER CONTROLLER WHO MAY HAVE RADAR AVAILABLE, DO NOT ASSUME THAT CONSTANT RADAR MONITORING AND COMPLETE ATC RADAR SERVICES ARE BEING PROVIDED.

4. Traffic Patterns

4.1 It is recommended that aircraft enter the airport traffic pattern at one of the following altitudes listed below. These altitudes should be maintained unless another traffic pattern altitude is published in the Chart Supplement or unless otherwise required by the applicable distance from cloud criteria (14 CFR Section 91.155). (See FIG ENR 1.1−2 and FIG ENR 1.1−3.):

4.1.1 Propeller−driven aircraft enter the traffic pattern at 1,000 feet above ground level (AGL).

4.1.2 Large and turbine−powered aircraft enter the traffic pattern at an altitude of not less than 1,500 feet AGL or 500 feet above the established pattern altitude.

4.1.3 Helicopters operating in the traffic pattern may fly a pattern similar to the fixed−wing aircraft pattern, but at a lower altitude (500 AGL) and closer to the runway. This pattern may be on the opposite side of the runway from fixed−wing traffic when airspeed requires or for practice power−off landings (autorotation) and if local policy permits. Landings not to the runway must avoid the flow of fixed wing traffic.

4.2 A pilot may vary the size of the traffic pattern depending on the aircraft's performance characteristics. Pilots of en route aircraft should be constantly alert for aircraft in traffic patterns and avoid these areas whenever possible.

4.3 Unless otherwise indicated, all turns in the traffic pattern must be made to the left, except for helicopters, as applicable.

4.4 On Sectional, Aeronautical, and VFR Terminal Area Charts, right traffic patterns are indicated at public−use and joint−use airports with the abbreviation "RP" (for Right Pattern), followed by the appropriate runway number(s) at the bottom of the airport data block.

EXAMPLE−
RP 9, 18, 22R

NOTE−
1. *Pilots are encouraged to use the standard traffic pattern. However, those pilots who choose to execute a straight−in approach, maneuvering for and execution of the approach should not disrupt the flow of arriving and departing traffic. Likewise, pilots operating in the traffic pattern should be alert at all times for aircraft executing straight−in approaches.*

REFERENCE−
AC 90−66, Non−Towered Airport Flight Operations

2. **RP indicates special conditions exist and refers pilots to the Chart Supplement.*

3. *Right traffic patterns are not shown at airports with full−time control towers.*

4.5 Wind conditions affect all airplanes in varying degrees. FIG ENR 1.1−4 is an example of a chart used to determine the headwind, crosswind, and tailwind components based on wind direction and velocity relative to the runway. Pilots should refer to similar information provided by the aircraft manufacturer when determining these wind components.

4.6 Unexpected Maneuvers in the Airport Traffic Pattern

4.6.1 There have been several incidents in the vicinity of controlled airports that were caused primarily by aircraft executing unexpected maneuvers. ATC service is based upon observed or known traffic and airport conditions. Controllers establish the sequence of arriving and departing aircraft by requiring them to adjust flight as necessary to achieve proper spacing. These adjustments can only be based on observed traffic, accurate pilot reports, and anticipated aircraft maneuvers. Pilots are expected to cooperate so as to preclude disruption of traffic flow or creation of conflicting patterns. The pilot in command of an aircraft is directly responsible for and is the final authority as to the operation of that aircraft.

4.6.2 On occasion it may be necessary for pilots to maneuver their aircraft to maintain spacing with the traffic they have been sequenced to follow. The controller can anticipate minor maneuvering such as shallow "S" turns. The controller cannot, however, anticipate a major maneuver such as a 360−degree turn. If a pilot makes a 360−degree turn after obtaining a landing sequence, the result is usually a gap in the landing interval and more importantly it causes a chain reaction which may result in a conflict with following traffic and interruption of the sequence established by the tower or approach controller. Should a pilot decide to make maneuvering turns to maintain spacing behind a preceding aircraft, the pilot should always advise the controller if at all possible. Except when requested by the controller or in emergency situations, a 360−degree turn should never be executed in the traffic pattern or when receiving radar service without first advising the controller.

43.2.2.2 Assigns altitudes in IFR clearances that are at or above the minimum IFR altitudes in Classes A, B, C, D, and E airspace.

43.2.2.3 Ensures acknowledgements by the pilot for issued information, clearance, or instructions.

43.2.2.4 Ensures that readbacks by the pilot of altitude, heading, or other items are correct. If incorrect, distorted, or incomplete, makes corrections as appropriate.

43.3 Contact Approach

43.3.1 Pilot

43.3.1.1 This approach must be requested by the pilot and is made in lieu of a standard or special instrument approach.

43.3.1.2 By requesting the contact approach, the pilot indicates that the flight is operating clear of clouds, has at least 1 mile flight visibility, and can reasonably expect to continue to the destination airport in those conditions.

43.3.1.3 Be aware that while conducting a contact approach, the pilot assumes responsibility for obstruction clearance.

43.3.1.4 Advises ATC immediately if you are unable to continue the contact approach or if you encounter less than 1 mile flight visibility.

43.3.1.5 Be aware that, if radar service is being received, it may automatically terminate when the pilot is told to contact the tower. “Radar service terminated” is used by ATC to inform a pilot that he/she will no longer be provided any of the services that could be received while in radar contact.

REFERENCE–
The Pilot/Controller Glossary is published in the Aeronautical Information Manual (AIM) and FAA Orders JO 7110.10, Flight Services, and JO 7110.65, Air Traffic Control.

43.3.2 Controller

43.3.2.1 Issues clearance for contact approach only when requested by the pilot. Does not solicit the use of this procedure.

43.3.2.2 Before issuing clearance, ascertains that reported ground visibility at destination airport is at least 1 mile.

43.3.2.3 Provides approved separation between aircraft cleared for contact approach and other IFR or special VFR aircraft. When using vertical separation, does not assign a fixed altitude but clears the aircraft at or below an altitude which is at least 1,000 feet below any IFR traffic but not below minimum safe altitudes prescribed in 14 CFR Section 91.119.

43.3.2.4 Issues alternative instructions if, in the controller’s judgment, weather conditions may make completion of the approach impractical.

43.4 Instrument Approach

43.4.1 Pilot

43.4.1.1 Be aware that the controller issues clearance for approach based only on known traffic.

43.4.1.2 Follows the procedures as shown on the instrument approach chart including all restrictive notations, such as:

a) Procedure not authorized at night.

b) Approach not authorized when local area altimeter not available.

c) Procedure not authorized when control tower not in operation.

d) Procedure not authorized when glide slope not used.

e) Straight–in minimums not authorized at night.

f) Radar required.

g) The circling minimums published on the instrument approach chart provide adequate obstruction clearance. The pilot should not descend below the circling altitude until the aircraft is in a position to make final descent for landing. Sound judgment and knowledge of the pilot's and the aircraft's capabilities are the criteria for a pilot to determine the exact maneuver in each instance since airport design and the aircraft position, altitude, and airspeed must all be considered. (See ENR 1.5, paragraph 11.6, Circling Minimums.)

43.4.1.3 Upon receipt of an approach clearance while on an unpublished route or being radar vectored:

a) Complies with the minimum altitude for IFR.

b) Maintains last assigned altitude until established on a segment of a published route or Instrument Approach Procedure (IAP), at which time published altitudes apply.

43.4.1.4 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 an 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.

43.4.1.5 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–
AIP, Section ENR 1.8, Cold Temperature Barometric Altimeter Errors, Setting Procedures, and Cold Temperature Airports (CTA).

43.4.2 Controller

43.4.2.1 Issues an approach clearance based on known traffic.

43.4.2.2 Issues an IFR approach clearance only after aircraft is established on a segment of published route or IAP; or assigns an appropriate altitude for the aircraft to maintain until so established.

43.5 Missed Approach

43.5.1 Pilot

43.5.1.1 Executes a missed approach when one of the following conditions exist:

a) Arrival at the missed approach point (MAP) or the decision height (DH) and visual reference to the runway environment is insufficient to complete the landing.

b) Determines that a safe approach or landing is not possible (see ENR 1.5, paragraph 27.8).

c) Instructed to do so by ATC.

43.5.1.2 Advises ATC that a missed approach will be made. Include the reason for the missed approach unless initiated by ATC.

43.5.1.3 Complies with the missed approach instructions for the IAP being executed from the MAP, unless other missed approach instructions are specified by ATC.

43.5.1.4 If executing a missed approach prior to reaching the MAP, fly the lateral navigation path of the instrument procedure to the MAP. Climb to the altitude specified in the missed approach procedure, except when a maximum altitude is specified between the final approach fix (FAF) and the MAP. In that case, comply with the maximum altitude restriction. Note, this may require a continued descent on the final approach.

43.5.1.5 When applicable, apply cold temperature correction to the published missed approach segment. Advise ATC when intending to apply cold temperature correction and of the amount of correction required on initial contact (or as soon as possible). This information is required for ATC to provide aircraft appropriate vertical

separation between known traffic. The pilot must not apply an altitude correction to an assigned altitude when provided an initial heading to fly or radar vector in lieu of published missed approach procedures, unless approved by ATC.

REFERENCE–
AIP, Section ENR 1.8, Cold Temperature Barometric Altimeter Errors, Setting Procedures, and Cold Temperature Airports (CTA).

43.5.1.6 Following a missed approach, requests clearance for specific action; i.e., another approach, hold for improved conditions, proceed to an alternate airport, etc.

43.5.2 Controller

43.5.2.1 Issues an approved alternate missed approach procedure if it is desired that the pilot execute a procedure other than as depicted on the instrument approach chart.

43.5.2.2 May vector a radar identified aircraft executing a missed approach when operationally advantageous to the pilot or the controller.

43.5.2.3 In response to the pilot's stated intentions, issues a clearance to an alternate airport, to a holding fix, or for reentry into the approach sequence, as traffic conditions permit.

43.6 Vectors

43.6.1 Pilot

43.6.1.1 Promptly complies with headings and altitudes assigned to you by the controller.

43.6.1.2 Questions any assigned heading or altitude believed to be incorrect.

43.6.1.3 If operating VFR and compliance with any radar vector or altitude would cause a violation of any Federal Aviation Regulation, advises ATC and obtain a revised clearance or instruction.

43.6.2 Controller

43.6.2.1 Vectors aircraft in Class A, B, C, D, and E airspace:

a) For separation.

b) For noise abatement.

c) To obtain an operational advantage for the pilot or the controller.

43.6.2.2 Vectors aircraft in Class A, B, C, D, E, and G airspace when requested by the pilot.

43.6.2.3 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.

43.6.2.4 May vector aircraft off assigned procedures. When published altitude or speed restrictions are included, controllers must assign an altitude, or if necessary, a speed.

43.6.2.5 May vector VFR aircraft, not at an ATC assigned altitude, at any altitude. In these cases, terrain separation is the pilot's responsibility.

43.7 Speed Adjustments

43.7.1 Pilot (In U.S. Domestic Class A, B, C, D, and E airspace)

43.7.2 Except as stated in paragraphs 43.7.5 and 43.7.6, advises ATC anytime the true airspeed at cruising level varies or is expected to vary by plus or minus 10 knots or 0.02 Mach number, whichever is less, of the filed true airspeed.

43.7.3 Complies with speed adjustments from ATC unless:

43.7.3.1 Except as stated in paragraphs 43.7.5 and 43.7.6, advises ATC anytime the true airspeed at cruising level varies or is expected to vary by plus or minus 10 knots or 0.02 Mach number, whichever is less, of the filed true airspeed.

43.7.3.2 Complies with speed adjustments from ATC unless:

a) The minimum or maximum safe airspeed for any particular operation is greater or less than the requested airspeed. In such cases, advises ATC.

b) Operating at or above 10,000 feet MSL on an ATC assigned SPEED ADJUSTMENT of more than 250 knots IAS and subsequent clearance is received for descent below 10,000 feet MSL. In such cases, pilots are expected to comply with 14 CFR Section 97.117(a).

43.7.4 Controller (In U.S. Domestic Class A, B, C, D, and E Airspaces)

43.7.4.1 Assigns aircraft to speed adjustments when necessary, but not as a substitute for good vectoring technique.

43.7.4.2 Adheres to the restrictions of FAA Order JO 7110.65, Air Traffic Control, as to when speed adjustment procedures may be applied.

43.7.4.3 Avoids speed adjustments requiring alternate decreases and increases.

43.7.4.4 Assigns speed adjustments to a specified IAS knots/Mach number or to increase or decrease speed utilizing increments of 5 knots or multiples thereof.

43.7.4.5 Terminates ATC-assigned speed adjustments when no longer required by issuing further instructions to pilots in the following manner:

a) Advises pilots to "resume normal speed" when the aircraft is on a heading, random routing, charted procedure, or route without published speed restrictions.

b) Instructs pilots to "comply with speed restrictions" when the aircraft is joining or resuming a charted procedure or route with published speed restrictions.

CAUTION–
The phraseology "Climb via SID" requires compliance with all altitude and/or speed restrictions depicted on the procedure.

c) Instructs pilots to "resume published speed" when aircraft are cleared via a charted instrument flight procedure that contains published speed restrictions.

d) Advises aircraft to "delete speed restrictions" when ATC assigned or published speed restrictions on a charted procedure are no longer required.

e) Clears pilots for approach without restating previously issued speed adjustments.

43.7.4.6 Gives due consideration to aircraft capabilities to reduce speed while descending.

43.7.5 Pilot (In Oceanic Class A and E Airspace)

43.7.5.1 If ATC has not assigned an airspeed, advises ATC anytime the true airspeed at cruising level varies or is expected to vary by ±10 knots or 0.02 Mach number, whichever is less, of the filed true airspeed.

43.7.5.2 If ATC has assigned an airspeed, aircraft must adhere to the ATC assigned airspeed and must request ATC approval before making any change thereto. If it is essential to make an immediate temporary change in the Mach number (e.g., due to turbulence), ATC must be notified as soon as possible. If it is not feasible, due to aircraft performance, to maintain the last assigned Mach number during an en route climb or descent, advises ATC at the time of the request.

43.7.6 Controller (In Oceanic Class A and E Airspace)

43.7.6.1 Assigns airspeed when necessary for separation of aircraft to comply with 14 CFR, ICAO regulations and procedures, or letters of agreement.

43.8 Traffic Advisories (Traffic Information)

43.8.1 Pilot

TBL ENR 1.4–3

Class C Airspace Areas by State

State/City	Airport
ALABAMA	
Birmingham	Birmingham–Shuttlesworth International
Huntsville	International–Carl T Jones Fld
Mobile	Regional
ALASKA	
Anchorage	Ted Stevens International
ARIZONA	
Davis–Monthan	AFB
Tucson	International
ARKANSAS	
Fayetteville (Springdale)	Northwest Arkansas Regional
Little Rock	Adams Field
CALIFORNIA	
Beale	AFB
Burbank	Bob Hope
Fresno	Yosemite International
Monterey	Peninsula
Oakland	Metropolitan Oakland International
Ontario	International
Riverside	March AFB
Sacramento	International
San Jose	Norman Y. Mineta International
Santa Ana	John Wayne/Orange County
Santa Barbara	Municipal
COLORADO	
Colorado Springs	Municipal
CONNECTICUT	
Windsor Locks	Bradley International
FLORIDA	
Daytona Beach	International
Fort Lauderdale	Hollywood International
Fort Myers	SW Florida Regional
Jacksonville	International
Orlando	Sanford International
Palm Beach	President Donald J. Trump International
Pensacola	NAS
Pensacola	International
Sarasota	Bradenton International
Tallahassee	Regional
Whiting	NAS
GEORGIA	
Savannah	Hilton Head International
HAWAII	
Kahului	Kahului
IDAHO	
Boise	Air Terminal
ILLINOIS	
Champaign	Urbana U of Illinois–Willard
Chicago	Midway International
Moline	Quad City International
Peoria	Greater Peoria Regional
Springfield	Abraham Lincoln Capital
INDIANA	
Evansville	Regional
Fort Wayne	International
Indianapolis	International
South Bend	Regional
IOWA	
Cedar Rapids	The Eastern Iowa
Des Moines	International
KANSAS	
Wichita	Mid–Continent
KENTUCKY	
Lexington	Blue Grass
Louisville	International–Standiford Field
LOUISIANA	
Baton Rouge	Metropolitan, Ryan Field
Lafayette	Regional
Shreveport	Barksdale AFB
Shreveport	Regional
MAINE	
Bangor	International
Portland	International Jetport
MICHIGAN	
Flint	Bishop International
Grand Rapids	Gerald R. Ford International
Lansing	Capital City
MISSISSIPPI	
Columbus	AFB
Jackson	Jackson–Evers International
MISSOURI	
Springfield	Springfield–Branson National
MONTANA	
Billings	Logan International
NEBRASKA	
Lincoln	Lincoln
Omaha	Eppley Airfield
Offutt	AFB
NEVADA	
Reno	Reno/Tahoe International
NEW HAMPSHIRE	
Manchester	Manchester
NEW JERSEY	
Atlantic City	International
NEW MEXICO	
Albuquerque	International Sunport
NEW YORK	
Albany	International
Buffalo	Niagara International
Islip	Long Island MacArthur
Rochester	Greater Rochester International

State/City	Airport
Syracuse	Hancock International
NORTH CAROLINA	
Asheville	Regional
Fayetteville	Regional/Grannis Field
Greensboro	Piedmont Triad International
Pope	AFB
Raleigh	Raleigh−Durham International
OHIO	
Akron	Akron−Canton Regional
Columbus	Port Columbus International
Dayton	James M. Cox International
Toledo	Express
OKLAHOMA	
Oklahoma City	Will Rogers World
Tinker	AFB
Tulsa	International
OREGON	
Portland	International
PENNSYLVANIA	
Allentown	Lehigh Valley International
PUERTO RICO	
San Juan	Luis Munoz Marin International
RHODE ISLAND	
Providence	Theodore Francis Green State
SOUTH CAROLINA	
Charleston	AFB/International
Columbia	Metropolitan
Greer	Greenville−Spartanburg International
Myrtle Beach	Myrtle Beach International
Shaw	AFB
TENNESSEE	
Chattanooga	Lovell Field
Knoxville	McGhee Tyson
Nashville	International
TEXAS	
Abilene	Regional
Amarillo	Rick Husband International
Austin	Austin−Bergstrom International
Corpus Christi	International
Dyess	AFB
El Paso	International
Harlingen	Valley International
Laughlin	AFB
Lubbock	Preston Smith International
Midland	International
San Antonio	International
VERMONT	
Burlington	International
VIRGIN ISLANDS	
St. Thomas	Charlotte Amalie Cyril E. King
VIRGINIA	
Richmond	International
Norfolk	International
Roanoke	Regional/Woodrum Field
WASHINGTON	
Point Roberts	Vancouver International
Spokane	Fairchild AFB
Spokane	International
Whidbey Island	NAS, Ault Field
WEST VIRGINIA	
Charleston	Yeager
WISCONSIN	
Green Bay	Austin Straubel International
Madison	Dane County Regional−Traux Field
Milwaukee	General Mitchell International

2.5 Class D Airspace

2.5.1 Definition. Generally, Class D airspace extends upward from the surface to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower. The configuration of each Class D airspace area is individually tailored and when instrument procedures are published, the airspace will normally be designed to contain the procedures.

2.5.1.1 Class D surface areas may be designated as full-time or part-time. Part-time Class D effective times are published in the Chart Supplement.

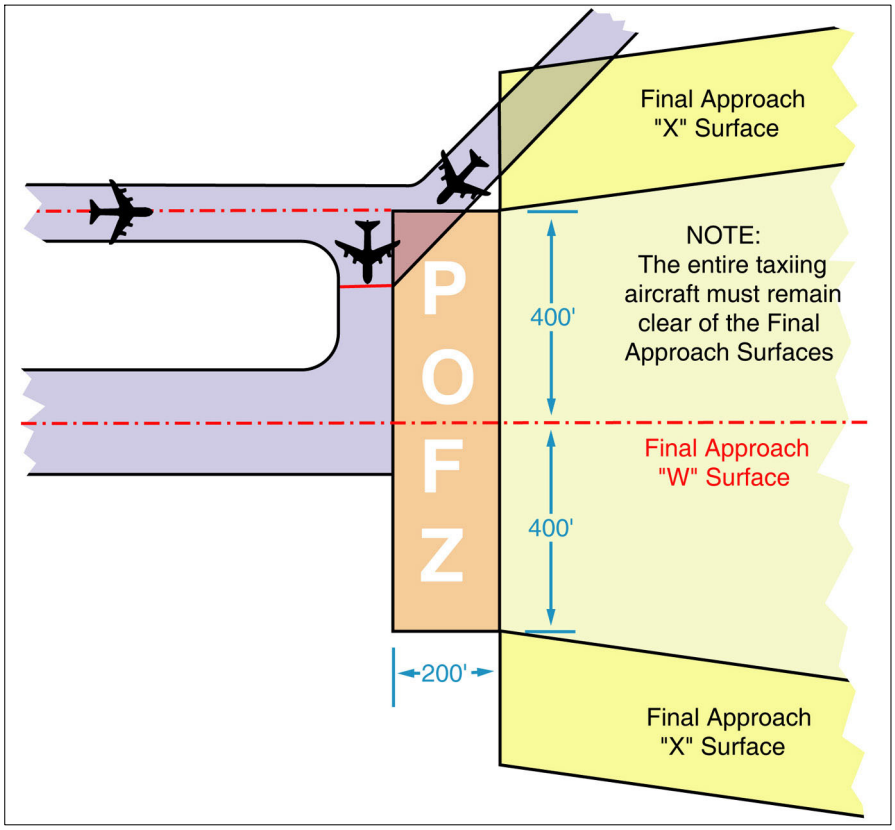
2.5.1.2 Part−time Class D surface areas may default to either a Class E surface area or Class G airspace. When a part−time Class D surface area defaults to Class G, the surface area airspace becomes Class G up to, but not including, the overlying controlled airspace. Normally, the overlying controlled airspace is the Class E transition area airspace that begins at either 700 feet or 1200 feet AGL. This may be determined by consulting the applicable VFR Sectional or Terminal Area Charts.

2.5.2 Operating Rules and Pilot Equipment Requirements

2.5.2.1 Pilot Certification. No specific certification required.

2.5.2.2 Equipment. Unless otherwise authorized by ATC, an operable two−way radio is required.

FIG ENR 1.5–16
Precision Obstacle Free Zone (POFZ)



11.3.2 Precision Obstacle Free Zone (POFZ). A volume of airspace above an area beginning at the runway threshold, at the threshold elevation, and centered on the extended runway centerline. The POFZ is 200 feet (60m) long and 800 feet (240m) wide. The POFZ must be clear when an aircraft on a vertically guided final approach is within 2 nautical miles of the runway threshold and the official weather observation is a ceiling below 250 feet or visibility less than 3/4 statute mile (SM) (or runway visual range below 4,000 feet). If the POFZ is not clear, the MINIMUM authorized height above touchdown (HAT) and visibility is 250 feet and 3/4 SM. The POFZ is considered clear even if the wing of the aircraft holding on a taxiway waiting for runway clearance penetrates the POFZ; however, neither the fuselage nor the tail may infringe on the POFZ. The POFZ is applicable at all runway ends including displaced thresholds. (See FIG ENR 1.5–16.)

11.4 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.

11.5 Side–Step Maneuver Minimums. Landing minimums for a side–step maneuver to the adjacent runway will normally be higher than the minimums to the primary runway.

11.6 Circling Minimums. In some busy terminal areas, ATC may not allow circling and circling minimums will not be published. Published circling minimums provide obstacle clearance when pilots remain within the appropriate area of protection. Pilots should remain at or above the circling altitude until the aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal

rate of descent using normal maneuvers. Circling may require maneuvers at low altitude, at low airspeed, and in marginal weather conditions. Pilots must use sound judgment, have an in−depth knowledge of their capabilities, and fully understand the aircraft performance to determine the exact circling maneuver since weather, unique airport design, and the aircraft position, altitude, and airspeed must all be considered. The following basic guidance applies to the circling maneuver:

11.6.1 A portion of the circling area may be restricted. The restriction will be described by a chart note with reference to a direction relative to a runway or runways, and no circling maneuvers may be made in that restricted area. The restrictions may be applicable only to certain aircraft approach categories, and circling restrictions may differ between day and night. Pilots must carefully review and comply with circling restrictions during all circling operations.

11.6.2 At towered airports, follow specific instruction from the controller during the circling maneuver; however, an ATC clearance does not negate published circling area restrictions.

11.6.3 At non−towered airports, pilots must utilize the turn direction specified by 14 CFR § 91.126(b) unless a published circling area restriction requires the pilot to make turns in the opposite direction. It may be desirable to fly over the airport to observe wind and turn indicators and other traffic that may be on the runway or flying in the vicinity of the airport.

11.6.4 Remain vigilant for other traffic and remain within the circling approach maneuvering airspace radius distance as shown in the table on page B2 of the U.S. TPP. Maneuver to a base or downwind leg, as appropriate, considering existing weather conditions, VFR traffic flow, altitude to be lost while using normal descent rates/maneuvers, and any circling restrictions.

REFERENCE−
AC 90−66, Non−Towered Airport Flight Operations.

11.6.5 The missed approach point (MAP) varies depending upon the approach flown. For vertically guided approaches, the MAP is at the decision altitude/decision height. Non−vertically guided and circling procedures share the same MAP, and the pilot determines this MAP by timing from the final approach fix, by a fix, a NAVAID, or a waypoint. Circling from a GLS, an ILS without a localizer line of minima, or an RNAV (GPS) approach without an LNAV line of minima is prohibited.

11.7 Instrument Approaches at a Military Field. When instrument approaches are conducted by civil aircraft at military airports, they must be conducted in accordance with the procedures and minimums approved by the military agency having jurisdiction over the airport.

12. Instrument Approach Procedure (IAP) Charts

12.1 14 CFR Section 91.175(a), Instrument approaches to civil airports, requires the use of SIAPs prescribed for the airport in 14 CFR Part 97 unless otherwise authorized by the Administrator (including ATC). If there are military procedures published at a civil airport, aircraft operating under 14 CFR Part 91 must use the civil procedure(s). Civil procedures are defined with "FAA" in parenthesis; e.g., (FAA), at the top, center of the procedure chart. DOD procedures are defined using the abbreviation of the applicable military service in parenthesis; for example, (USAF), (USN), (USA). 14 CFR Section 91.175(g), Military airports, requires civil pilots flying into or out of military airports to comply with the IAP's and takeoff and landing minimums prescribed by the authority having jurisdiction at those airports. Unless an emergency exists, civil aircraft operating at military airports normally require advance authorization, commonly referred to as "Prior Permission Required" or "PPR." Additionally, some civil airports may require PPR for the use of runways, taxiways, aprons, or other airport facilities and services. PPRs are typically published in the Chart Supplement entry for the airport. Temporary or short−notice PPRs may be disseminated via NOTAM.

NOTE−
Civil aircraft may conduct practice VFR approaches using DOD instrument approach procedures when approved by the air traffic controller.

12.1.1 IAPs (standard and special, civil and military) are based on joint civil and military criteria contained in the U.S. Standard for TERPS. The design of IAPs based on criteria contained in TERPS, takes into account the

12.13.7.3 Missed Approach Symbology. In order to make missed approach guidance more readily understood, a method has been developed to display missed approach guidance in the profile view through the use of quick reference icons. Due to limited space in the profile area, only four or fewer icons can be shown. However, the icons may not provide representation of the entire missed approach procedure. The entire set of textual missed approach instructions are provided at the top of the approach chart in the pilot briefing. (See FIG ENR 1.5−22.)

12.13.7.4 Waypoints. All RNAV or GPS stand−alone IAPs are flown using data pertaining to the particular IAP obtained from an onboard database, including the sequence of all WPs used for the approach and missed approach, except that step down waypoints may not be included in some TSO−C−129 receiver databases. Included in the database, in most receivers, is coding that informs the navigation system of which WPs are fly−over (FO) or fly−by (FB). The navigation system may provide guidance appropriately − including leading the turn prior to a fly−by WP; or causing overflight of a fly−over WP. Where the navigation system does not provide such guidance, the pilot must accomplish the turn lead or waypoint overflight manually. Chart symbology for the FB WP provides pilot awareness of expected actions. Refer to the legend of the U.S. Terminal Procedures books.

12.13.7.5 TAAs are described in subparagraph 12.4, Terminal Arrival Area (TAA). When published, the RNAV chart depicts the TAA areas through the use of "icons" representing each TAA area associated with the RNAV procedure (See FIG ENR 1.5−22). These icons are depicted in the plan view of the approach chart, generally arranged on the chart in accordance with their position relative to the aircrafts arrival from the en route structure. The WP, to which navigation is appropriate and expected within each specific TAA area, will be named and depicted on the associated TAA icon. Each depicted named WP is the IAF for arrivals from within that area. TAAs may not be used on all RNAV procedures because of airspace congestion or other reasons.

12.13.7.6 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:

a) 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

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.

REFERENCE−
AIP, Section ENR 1.8, Cold Temperature Barometric Altimeter Errors, Setting Procedures, and Cold Temperature Airports (CTA).

12.13.7.7 WAAS Channel Number/Approach ID. The WAAS Channel Number is an optional equipment capability that allows the use of a 5−digit number to select a specific final approach segment without using the menu method. The Approach ID is an airport unique 4−character combination for verifying the selection and extraction of the correct final approach segment information from the aircraft database. It is similar to the ILS ident, but displayed visually rather than aurally. The Approach ID consists of the letter W for WAAS, the runway number, and a letter other than L, C or R, which could be confused with Left, Center and Right, e.g., W35A. Approach IDs are assigned in the order that WAAS approaches are built to that runway number at that airport. The WAAS Channel Number and Approach ID are displayed in the upper left corner of the approach procedure pilot briefing.

12.13.7.8 At locations where outages of WAAS vertical guidance may occur daily due to initial system limitations, a negative W symbol (W) will be placed on RNAV (GPS) approach charts. Many of these outages will be very short in duration, but may result in the disruption of the vertical portion of the approach. The W symbol indicates that NOTAMs or Air Traffic advisories are not provided for outages which occur in the WAAS LNAV/VNAV or LPV vertical service. Use LNAV or circling minima for flight planning at these locations, whether as a destination or alternate. For flight operations at these locations, when the WAAS avionics indicate that LNAV/VNAV or LPV service is available, then vertical guidance may be used to complete the approach using the displayed level of service. Should an outage occur during the procedure, reversion to LNAV minima may be required. As the WAAS coverage is expanded, the W will be removed.

NOTE−
Properly trained and approved, as required, TSO-C145() and TSO-C146() equipped users (WAAS users) with and using approved baro-VNAV equipment may plan for LNAV/VNAV DA at an alternate airport. Specifically authorized WAAS users with and using approved baro-VNAV equipment may also plan for RNP 0.3 DA at the alternate airport as long as the pilot has verified RNP availability through an approved prediction program.

13. Special Instrument Approach Procedures

13.1 Instrument Approach Procedure (IAP) charts reflect the criteria associated with the U.S. Standard for Terminal Instrument [Approach] Procedures (TERPs), which prescribes standardized methods for use in developing IAPs. Standard IAPs are published in the Federal Register (FR) in accordance with Title 14 of the Code of Federal Regulations, Part 97, and are available for use by appropriately qualified pilots operating properly equipped and airworthy aircraft in accordance with operating rules and procedures acceptable to the FAA. Special IAPs are also developed using TERPS but are not given public notice in the FR. The FAA authorizes only certain individual pilots and/or pilots in individual organizations to use special IAPs, and may require additional crew training and/or aircraft equipment or performance, and may also require the use of landing aids, communications, or weather services not available for public use. Additionally, IAPs that service private use airports or heliports are generally special IAPs. FDC NOTAMs for Specials, FDC T-NOTAMs, may also be used to promulgate safety-of-flight information relating to Specials provided the location has a valid landing area identifier and is serviced by the United States NOTAM system. Pilots may access NOTAMs online or through an FAA Flight Service Station (FSS). FSS specialists will not automatically provide NOTAM information to pilots for special IAPs during telephone pre−flight briefings. Pilots who are authorized by the FAA to use special IAPs must specifically request FDC NOTAM information for the particular special IAP they plan to use.

14. Radar Approaches

14.1 The only airborne radio equipment required for radar approaches is a functioning radio transmitter and receiver. The radar controller vectors the aircraft to align it with the runway centerline. The controller continues the vectors to keep the aircraft on course until the pilot can complete the approach and landing by visual reference to the surface. There are two types of radar approaches, “Precision” (PAR) and “Surveillance” (ASR).

14.2 A radar approach may be given to any aircraft upon request and may be offered to pilots of aircraft in distress or to expedite traffic; however, a surveillance approach might not be approved unless there is an ATC operational requirement, or in an unusual or emergency situation. Acceptance of a precision or surveillance approach by a pilot does not waive the prescribed weather minimums for the airport or for the particular aircraft operator concerned. The decision to make a radar approach when the reported weather is below the established minimums rests with the pilot.

14.3 Precision and surveillance approach minimums are published on separate pages in the Federal Aviation Administration Instrument Approach Procedure charts.

14.3.1 A Precision Approach (PAR) is one in which a controller provides highly accurate navigational guidance in azimuth and elevation to a pilot. Pilots are given headings to fly to direct them to and keep their aircraft aligned with the extended centerline of the landing runway. They are told to anticipate glidepath interception approximately 10 to 30 seconds before it occurs and when to start descent. The published decision altitude (DA) will be given only if the pilot requests it. If the aircraft is observed to deviate above or below the glidepath, the pilot is given the relative amount of deviation by use of terms “slightly” or “well” and is expected to adjust the aircraft’s rate of descent to return to the glidepath. Trend information is also issued with respect to the elevation of the aircraft and may be modified by the terms “rapidly” and “slowly”; e.g., “well above glidepath, coming down rapidly.” Range from touchdown is given at least once each mile. If an aircraft is observed by the controller to proceed outside of specified safety zone limits in azimuth and/or elevation and continues to operate outside these prescribed limits, the pilot will be directed to execute a missed approach or to fly a specified course unless the pilot has the runway environment (runway, approach lights, etc.) in sight. Navigational guidance in

azimuth and elevation is provided to the pilot until the aircraft reaches the published DA. Advisory course and glidepath information is furnished by the controller until the aircraft passes over the landing threshold, at which point the pilot is advised of any deviation from the runway centerline. Radar service is automatically terminated upon completion of the approach.

14.3.2 A Surveillance Approach (ASR) is one in which a controller provides navigational guidance in azimuth only. The pilot is furnished headings to fly to align the aircraft with the extended centerline of the landing runway. Since the radar information used for a surveillance approach is considerably less precise than that used for a precision approach, the accuracy of the approach will not be as great, and higher minimums will apply. Guidance in elevation is not possible but the pilot will be advised when to commence descent to the minimum descent altitude (MDA) or, if appropriate, to an intermediate "step down fix" minimum crossing altitude and subsequently to the prescribed MDA. In addition, the pilot will be advised of the location of the missed approach point (MAP) prescribed for the procedure and the aircraft's position each mile on final from the runway, airport/heliport, or MAP, as appropriate. If requested by the pilot, recommended altitudes will be issued at each mile, based on the descent gradient established for the procedure, down to the last mile that is at or above the MDA. Normally, navigational guidance will be provided until the aircraft reaches the MAP. Controllers will terminate guidance and instruct the pilot to execute a missed approach unless at the MAP the pilot has the runway, airport/heliport in sight or, for a helicopter point−in−space approach, the prescribed visual reference with the surface is established. Also, if at any time during the approach the controller considers that safe guidance for the remainder of the approach cannot be provided, the controller will terminate guidance and instruct the pilot to execute a missed approach. Similarly, guidance termination and missed approach will be effected upon pilot request, and for civil aircraft only, controllers may terminate guidance when the pilot reports the runway, airport/heliport, or visual surface route (point−in−space approach) in sight or otherwise indicates that continued guidance is not required. Radar service is automatically terminated at the completion of a radar approach.

NOTE−
The published MDA for straight−in approaches will be issued to the pilot before beginning descent. When a surveillance approach will terminate in a circle−to−land maneuver, the pilot must furnish the aircraft approach category to the controller. The controller will then provide the pilot with the appropriate MDA.

14.3.3 A No−Gyro Approach is available to a pilot under radar control who experiences circumstances wherein the directional gyro or other stabilized compass is inoperative or inaccurate. When this occurs, the pilot should so advise ATC and request a No−Gyro vector or approach. Pilots of aircraft not equipped with a directional gyro or other stabilized compass who desire radar handling may also request a No−Gyro vector or approach. The pilot should make all turns at standard rate and should execute the turn immediately upon receipt of instructions. For example, "TURN RIGHT," "STOP TURN." When a surveillance or precision approach is made, the pilot will be advised after the aircraft has been turned onto final approach to make turns at half standard rate.

15. Radar Monitoring of Instrument Approaches

15.1 PAR facilities operated by the FAA and the military services at some joint−use (civil/military) and military installations monitor aircraft on instrument approaches and issue radar advisories to the pilot when weather is below VFR minimum (1,000 and 3), at night, or when requested by a pilot. This service is provided only when the PAR final approach course coincides with the final approach of the navigational aid and only during the operational hours of the PAR. The radar advisories serve only as a secondary aid since the pilot has selected the navigational aid as the primary aid for the approach.

15.2 Prior to starting final approach, the pilot will be advised of the frequency on which the advisories will be transmitted. If, for any reason, radar advisories cannot be furnished, the pilot will be so advised.

15.3 Advisory information, derived from radar observations, includes information on:

15.3.1 Passing the final approach fix inbound (nonprecision approach) or passing the outer marker or the fix used in lieu of the outer marker inbound (precision approach).

15.3.2 Trend advisories with respect to elevation and/or azimuth radar position and movement will be provided.

NOTE−
At this point, the pilot may be requested to report sighting the approach lights or the runway.

NOTE−
Whenever the aircraft nears the PAR safety limit, the pilot will be advised that the aircraft is well above or below the glidepath or well left or right of course. Glidepath information is given only to those aircraft executing a precision approach, such as ILS. Altitude information is not transmitted to aircraft executing other than precision approaches because the descent portions of these approaches generally do not coincide with the depicted PAR glidepath.

15.3.3 If, after repeated advisories, the aircraft proceeds outside the PAR safety limit or if a radical deviation is observed, the pilot will be advised to execute a missed approach if not visual.

15.4 Radar service is automatically terminated upon completion of the approach.

16. ILS Approach

16.1 Communications should be established with the appropriate FAA control tower or with the FAA FSS where there is no control tower, prior to starting an ILS approach. This is in order to receive advisory information as to the operation of the facility. It is also recommended that the aural signal of the ILS be monitored during an approach as to assure continued reception and receipt of advisory information, when available.

Departure Route Description section of the graphic departure, the heading will be bolded and underlined, and the runway information will just be bolded.

c) Legacy takeoff obstacle notes combine low, close−in and takeoff obstacles for each runway.

d) New takeoff obstacle notes separate low, close−in and takeoff minimums obstacle notes. There is also a DER crossing altitude included in the notes section, providing the pilot with a DER crossing height that clears all obstacles that penetrate the 40:1 OCS.

e) The obstacles are described with an inner limit from the DER, using the word "beginning," expressed in 1/4 SM increments rounded down and an outer limit, using the words "extending to" expressed in 1/4 SM increments rounded up. They will also be described in relation to the extended runway centerline as "left, right, or crossing." Crossing means they are within 100ft of the centerline. Left or right means they are greater than 100 ft from centerline. Both an MSL altitude and height above DER elevation will be provided for the obstacle that penetrates the 40:1 OCS the most. This allows the pilot to determine when the reported weather conditions are adequate to see and avoid the low, close−in obstacle(s), if aircraft performance does not permit the aircraft to climb over them. It also allows the pilot to correlate the position of the obstacles and the MSL elevation and height above DER for the controlling obstacle for the published higher than standard takeoff minimums.

f) A DER crossing height using standard ceiling/visibility is provided as a new takeoff minimums option for pilots in addition to the current options (higher than standard ceiling/visibility or standard ceiling/visibility with a higher than standard climb gradient, or a reduced takeoff runway length with a standard climb gradient and standard ceiling/visibility).

EXAMPLE−
Legacy takeoff minimums and obstacle notes

TAKEOFF MINIMUMS:
***Rwy12 L/R**, 400-2 1/2 or std. w/min. climb of 261' per NM to 500.*

TAKEOFF OBSTACLE NOTES:
***Rwy 14**, trees 2011' from DER, 29' left of centerline, 100' AGL/3829' MSL.*

***Rwy 32**, trees 1009' from DER, 697' left of centerline, 100' AGL/3839' MSL. Tower 4448' from DER, 1036' left of centerline, 165' AGL/3886' MSL.*

EXAMPLE−
New takeoff minimums and obstacle notes

TAKEOFF MINIMUMS:
***Rwy12 L/R:** 400−2 1/2 or std. w/min. climb of 261' per NM to 500 or standard and crossing DER 66' above DER Elev clears takeoff minimums obstacles.*

TAKEOFF OBSTACLE NOTES:
***Rwy 12L LOW, CLOSE−IN OBSTACLES:** trees beginning 600' from DER, extending to 1/2 SM, crossing centerline, up to 156' MSL, 86' above DER, crossing DER 49' above DER Elev clears low, close−in obstacles.*

***Rwy 12L TAKEOFF MINIMUMS OBSTACLES:** buildings, crane, tower beginning 1 1/2 SM from DER, extending to 1 3/4 SM, left, right, and crossing centerline, up to 373' MSL, 284' above DER, crossing DER at 66' above DER Elev clears takeoff minimums obstacles.*

***Rwy 12R LOW, CLOSE−IN OBSTACLES:** obstacles 35' and below.*

***Rwy 12R TAKEOFF MINIMUMS OBSTACLES:** buildings, crane, tower beginning 1 1/2 SM from DER, extending to 1 3/4 SM, left, right, and crossing centerline, up to 373' MSL, 284' above DER, crossing DER at 66' above DER Elev clears take−off minimums obstacles.*

***Rwy 30L/R LOW, CLOSE−IN OBSTACLES:** obstacles 35' and below.*

37.5.4.4 Compliance with 14 CFR part 121 or 135 one−engine−inoperative (OEI) departure performance requirements, or similar ICAO/State rules, cannot be assured by the sole use of takeoff obstacle note data as published in the TPP. Operators conducting these operations should refer to precise data sources (i.e., GIS database, etc.) specifically intended for OEI departure planning (see AC 120−91).

37.5.5 Climb gradients greater than 200 FPNM are specified when required to support procedure design constraints, obstacle clearance, and/or airspace restrictions. Compliance with a climb gradient for these purposes is mandatory when the procedure is part of the ATC clearance, unless increased takeoff minimums are provided and weather conditions allow compliance with these minimums.

NOTE−
Climb gradients for ATC purposes are being phased out on SIDs.

EXAMPLE−
"Cross ALPHA intersection at or below 4000; maintain 6000." The pilot climbs at least 200 FPNM to 6000. If 4000 is reached before ALPHA, the pilot levels off at 4000 until passing ALPHA; then immediately resumes at least 200 FPNM climb.

EXAMPLE−
"TAKEOFF MINIMUMS: RWY 27, Standard with a minimum climb of 280' per NM to 2500." A climb of at least 280 FPNM is required to 2500 and is mandatory when the departure procedure is included in the ATC clearance.

NOTE−
Some SIDs still retain labeled "ATC" climb gradients published or have climb gradients that are established to meet a published altitude restriction that is not required for obstacle clearance or procedure design criteria. These procedures will be revised in the course of the normal procedure amendment process.

37.5.6 Climb gradients may be specified only to an altitude/fix, above which the normal gradient applies.

An ATC−required altitude restriction published at a fix, will not have an associated climb gradient published with that restriction. Pilots are expected to determine if crossing altitudes can be met, based on the performance capability of the aircraft they are operating.

EXAMPLE−
"Minimum climb 340 FPNM to ALPHA." The pilot climbs at least 340 FPNM to ALPHA, then at least 200 FPNM to MIA.

37.5.7 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 by 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, when executing VCOA, notify ATC prior to departure. Climb in visual conditions to cross Broken Bow Muni/Keith Glaze Field at or above 3500' before proceeding on course.

37.6 Obstacle Clearance Responsibilities. DPs are designed so that the pilot's adherence to the procedure's lateral path and vertical climb requirements will ensure obstacle protection.

ENR 1.10 Flight Planning (Restriction, Limitation or Advisory Information)

1. Preflight Preparation

1.1 Prior to every flight, pilots should gather all information vital to the nature of the flight, assess whether the flight would be safe, and then file a flight plan. Pilots can receive a regulatory compliant briefing without contacting Flight Service. Pilots are encouraged to use automated resources and review Advisory Circular AC 91−92, Pilot's Guide to a Preflight Briefing, for more information. Pilots who prefer to contact Flight Service are encouraged to conduct a self−brief prior to calling. Conducting a self−brief before contacting Flight Service provides familiarity of meteorological and aeronautical conditions applicable to the route of flight and promotes a better understanding of weather information. Pilots may access Flight Service through www.1800wxbrief.com or by calling 1−800−WX−BRIEF (1−800−992−7433) in the CONUS, Hawaii, and U.S. territories; or 1−833−AK−BRIEF (1−833−252−7433) in Alaska. Flight planning applications are also available for conducting a self−briefing and filing flight plans.

NOTE−
Alaska only: Pilots filing flight plans via "fast file" who desire to have their briefing recorded, should include a statement at the end of the recording as to the source of their weather briefing.

1.2 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, Domestic 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.

1.3 FSSs are required to advise of pertinent NOTAMs if a *standard* briefing is requested, but if they are overlooked, do not hesitate to remind the specialist that you have not received NOTAM information. Additionally, FSS briefers do not provide FDC NOTAM information for special instrument approach procedures unless specifically asked. Pilots authorized by the FAA to use special instrument approach procedures must specifically request FDC NOTAM information for these procedures. Pilots who receive the information electronically will receive NOTAMs for special IAPs automatically.

NOTE−
Domestic Notices and International Notices are not provided during a briefing unless specifically requested by the pilot since the FSS specialist has no way of knowing whether the pilot has already checked the Federal NOTAM System (FNS) NOTAM Search External links or Air Traffic Plans and Publications website prior to calling. Airway NOTAMs, procedural NOTAMs, and NOTAMs that are general in nature and not tied to a specific airport/facility (for example, flight advisories and restrictions, open duration special security instructions, and special flight rules areas) are briefed solely by pilot request. Remember to ask for these notices if you have not already reviewed this information, and to request all pertinent NOTAMs specific to your flight.

1.4 Pilots are urged to use only the latest issue of aeronautical charts in planning and conducting flight operations. Aeronautical charts are revised and reissued on a periodic basis to ensure that depicted data are current and reliable. In the conterminous U.S., sectional charts are updated every 56 days, IFR en route charts each 56 days, and amendments to civil IFR approach charts are accomplished on a 56−day cycle with a change notice volume issued on the 28−day mid−cycle. Charts that have been superseded by those of a more recent date may contain obsolete or incomplete flight information.

REFERENCE−
AIP, GEN 3.2, Aeronautical Charts.
AIP, ENR 1.5, Para 12, Instrument Procedure (IAP) Charts.

1.5 When requesting a preflight briefing, identify yourself as a pilot and provide the following:

1.5.1 Type of flight planned; e.g., VFR or IFR.

1.5.2 Aircraft number or pilot's name.

1.5.3 Aircraft type.

1.5.4 Departure airport.

1.5.5 Route of flight.

1.5.6 Destination.

1.5.7 Flight altitude(s).

1.5.8 ETD and ETE.

1.6 Prior to conducting a briefing, briefers are required to have the background information listed above so that they may tailor the briefing to the needs of the proposed flight. The objective is to communicate a "picture" of meteorological and aeronautical information necessary for the conduct of a safe and efficient flight. Briefers use all available weather and aeronautical information to summarize data applicable to the proposed flight. Pilots who have briefed themselves before calling Flight Service should advise the briefer what information has been obtained from other sources.

REFERENCE−
See AIP, GEN 3.5 for meteorological services.

1.7 The Federal Aviation Administration has designated High Density Traffic Airports (HDTA) and has prescribed air traffic rules and requirements for operating aircraft (excluding helicopter operations) to and from these airports.

REFERENCE−
AIP, GEN 3.3, Paragraph 9.7, Airport Reservations Operations and Procedures.

1.8 In addition to the filing of a flight plan, if the flight will traverse or land in one or more foreign countries, it is particularly important that pilots leave a complete itinerary with someone directly concerned and keep that person advised of the flight's progress. If serious doubt arises as to the safety of the flight, that person should first contact the FSS.

1.9 Pilots operating under the provisions of 14 CFR Part 135 without an FAA assigned 3−letter designator, must prefix the normal registration (N) number with the letter "T" on flight plan filing.

EXAMPLE−
TN 1234B.

1.10 Cold Temperature Operations

1.10.1 Pilots should begin planning for cold temperature operations during the preflight planning phase. Cold temperatures produce barometric altimetry errors, which affect instrument flight procedures. 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:

1.10.1.1 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

1.10.1.2 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.

1.10.2 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:

1.10.2.1 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.

1.10.2.2 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.

1.10.3 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−
AIP, ENR 1.8, Cold Temperature Barometric Altimeter Errors, Setting Procedures and Cold Temperature Airports (CTA).

2. Follow IFR Procedures Even When Operating VFR

2.1 To maintain IFR proficiency, pilots are urged to practice IFR procedures whenever possible, even when operating VFR. Some suggested practices include:

2.1.1 Obtain a complete preflight briefing and check NOTAMs. Prior to every flight, pilots should gather all information vital to the nature of the flight. Pilots can receive a regulatory compliant briefing without contacting Flight Service. Pilots are encouraged to use automated resources and review AC 91−92, Pilot's Guide to a Preflight Briefing, for more information. NOTAMs are available online from the Federal NOTAM system (FNS) search website (https://notams.aim.faa.gov/notamSearch/), private vendors, or on request from Flight Service.

2.1.2 File a flight plan. This is an excellent low−cost insurance policy. The cost is the time it takes to fill it out. The insurance includes the knowledge that someone will be looking for you if you become overdue at your destination. Pilots can file flight plans either by using a website or by calling Flight Service. Flight planning applications are also available to file, activate, and close VFR flight plans.

2.1.3 Use current charts.

2.1.4 To enhance situational awareness and minimize distractions during critical phases of flight, pre−load all intended waypoints into a suitable RNAV system while the aircraft is on the ground.

2.1.5 Use the navigation aids. Practice maintaining a good course; keep the course deviation indicator centered.

2.1.6 Maintain a constant altitude that is appropriate for the direction of flight.

2.1.7 Estimate en route position times.

2.1.8 Make accurate and frequent position reports to the FSSs along your route of flight.

2.2 Simulated IFR flight is recommended (under the hood); however, pilots are cautioned to review and adhere to the requirements specified in 14 CFR Section 91.109 before and during such flight.

2.3 When flying VFR at night, in addition to the altitude appropriate for the direction of flight, pilots should maintain an altitude which is at or above the minimum en route altitude as shown on charts. This is especially true in mountainous terrain, where there is usually very little ground reference. Do not depend on your eyes alone to avoid rising unlighted terrain, or even lighted obstructions such as TV towers.

3. Notice to Airmen (NOTAM) System

3.1 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.

3.1.1 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:

3.1.1.1 Aerodromes.

3.1.1.2 Runways, taxiways, and ramp restrictions.

3.1.1.3 Obstructions.

3.1.1.4 Communications.

3.1.1.5 Airspace.

3.1.1.6 Status of navigational aids or radar service availability.

3.1.1.7 Other information essential to planned en route, terminal, or landing operations.

3.1.2 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 web page. 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).

NOTE−
NOTAM information is transmitted using ICAO contractions to reduce transmission time. See TBL ENR 1.10−2 for a listing of the most commonly used contractions, or go online to the following URL: https://www.notams.faa.gov/downloads/contractions.pdf. For a complete listing of approved NOTAM Contractions, see FAA JO Order 7340.2, Contractions.

3.1.3 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. Pilots should also ensure NOTAMs are updated for locations without an operating control tower. Snow removal, fire and rescue activities, construction, and wildlife encroachment, could provide hazards to pilots. This information may not be available to pilots prior to arrival/departure.

3.1.4 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. Pilots using VFR charts can also review the Aeronautical Information Services' (AIS) website concerning Safety Alerts, Charting Notices, and Digital Product Notices at https://www.faa.gov/air_traffic/flight_info/aeronav/safety_alerts/ for additional chart information.

3.2 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.

3.2.1 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 ENR 4.1−22.)

3.2.2 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 intentions. TBL ENR 1.10−1 lists an example of a GPS testing NOTAM.

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

3.3.1 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. 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 TBL ENR 1.10−1, 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:

3.3.1.1 Aerodrome activity and conditions, to include field conditions.

3.3.1.2 Airspace to include CARF, SUA, and general airspace activity like UAS or pyrotechnics.

3.3.1.3 Visual and radio navigational aids.

3.3.1.4 Communication and services.

3.3.1.5 Pointer NOTAMs. NOTAMs issued to point to additional aeronautical information. When pointing to another NOTAM, the keyword in the pointer NOTAM must match the keyword in the original NOTAM. Pointer NOTAMs should be issued for, but are not limited to, TFRs, Airshows, Temporary SUA, major NAS system interruptions, etc.

3.3.1.6 NOTAM Ds that crossover into International NOTAMs. These NOTAMs contain the same data as NOTAM Ds, only they are referenced differently. They are categorized, stored, and issued with a series letter preceding them and are distributed via Service A to countries requesting NOTAMs for that airport. The FAA currently uses the Series A (and may use Series K) for this type of NOTAM.

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

3.3.2.1 Amendments to published IAPs and other current aeronautical charts.

3.3.2.2 Temporary Flight Restrictions (TFRs) 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.

3.3.2.3 High barometric pressure warning.

3.3.2.4 Laser light activity.

3.3.2.5 ADS−B, TIS−B, and FIS−B service availability.

3.3.2.6 Satellite−based systems such as WAAS or GPS.

3.3.2.7 Special Notices.

3.3.3 International NOTAMs.

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

3.3.3.2 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.

3.3.3.3 International NOTAMs received by the FAA from other countries are stored in the U.S. NOTAM System.

3.3.3.4 The International NOTAM format includes a "Q" Line that can be easily read/parsed by a computer and allows the NOTAM to be displayed digitally.

a) Field A: ICAO location identifier or FIR affected by the NOTAM.

b) Field B: Start of Validity.

c) Field C: End of Validity (both in [Year][Month][Day][Hour][Minute] format).

d) Field D: (when present) Schedule.

e) Field E: Full NOTAM description.

f) Field F: (when present) Lowest altitude, or "SFC."

g) Field G: (when present) Highest altitude, or "UNL."

3.3.3.5 For more on International format, please see Annex 15.

3.3.4 Military NOTAMs. 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.

3.4 Security NOTAMS. U.S. Domestic Security NOTAMS are FDC NOTAMS that inform pilots of curtain U.S. security activities or requirements, such as Special Security Instructions for aircraft operations to, from, within, or transitioning U.S. territorial airspace. These NOTAMS are found on the Federal NOTAM System (FNS) NOTAM Search website under the location designator KZZZ.

3.4.1 United States International Flight Prohibitions, Potential Hostile Situations, and Foreign Notices are issued by the FAA and are found on the Federal NOTAM System (FNS) NOTAM Search website under the location designator KICZ.

TBL ENR 1.10−1
NOTAM Keywords

Keyword	Definition
RWY	**Runway**
Example	!BNA BNA RWY 18/36 CLSD YYMMDDHHMM−YYMMDDHHMM
TWY	**Taxiway**
Example	!BTV BTV TWY C EDGE LGT OBSC YYMMDDHHMM−YYMMDDHHMM
APRON	**Apron/Ramp**
Example	!BNA BNA APRON NORTH APN E 100FT CLSD YYMMDDHHMM−YYMMDDHHMM
AD	**Aerodrome**
Example	!BET BET AD AP ELK NEAR MOVEMENT AREAS YYMMDDHHMM−YYMMDDHHMM
OBST	**Obstruction**
Example	!SJT SJT OBST MOORED BALLOON WI AN AREA DEFINED AS 1NM RADIUS OF SJT 2430FT (510FT AGL) FLAGGED YYMMDDHHMM−YYMMDDHHMM
NAV	**Navigation Aids**
Example	!SHV SHV NAV ILS RWY 32 110.3 COMMISSIONED YYMMDDHHMM−PERM
COM	**Communications**
Example	!INW INW COM REMOTE COM OUTLET 122.6 U/S YYMMDDHHMM−YYMMDDHHMM EST (Note* EST will auto cancel)
SVC	**Services**
Example	!ROA ROA SVC TWR COMMISSIONED YYMMDDHHMM−PERM
AIRSPACE . .	**Airspace**
Example	!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
Keyword	**Definition**
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−YYMMDDHHMM
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. YYMMDDHHMM−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. YYMMDDHHMM−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
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 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

TBL ENR 1.10–2

Contractions Commonly Found in NOTAMs

	A
ABN	Aerodrome Beacon
ACFT	Aircraft
ACT	Active
ADJ	Adjacent
AGL	Above Ground Level
ALS	Approach Light System
AP	Airport
APN	Apron
APP	Approach control office *or* approach control *or* approach control service
ARST	Arresting *(specify (part of) aircraft arresting equipment)*
ASDA	Accelerate Stop Distance Available
ASPH	Asphalt
AUTH	Authorized *or* authorization
AVBL	Available *or* availability
AVGAS	Aviation gasoline
AWOS	Automatic Weather Observing System
AZM	Azimuth
	B
BA	Braking action
BCN	Beacon *(aeronautical ground light)*
BCST	Broadcast
BDRY	Boundary
BLDG	Building
BLW	Below
BTN	Between
	C
C	Center *(preceded by runway designator number to identify a parallel runway)*
CD	Clearance delivery
CIV	Civil
CL	Centerline
CLSD	Close *or* closed *or* closing
COM	Communication
CONC	Concrete
COND	Condition
CONS	Continuous
CONST	Construction *or* constructed
CPDLC	Controller Pilot Data Link Communications
CTC	Contact
CUST	Customs
	D
DA	Decision altitude
DEG	Degrees
DEP	Depart *or* Departure
DER	Departure end of the runway
DH	Decision Height
DIST	Distance
DLY	Daily
DP	Dew Point Temperature
DPT	Depth
DTHR	Displaced Runway Threshold

	E
E	East *or* eastern longititude
EB	Eastbound
EMERG	Emergency
ENE	East–northeast
EQPT	Equipment
ESE	East–southeast
EST	Estimate *or* estimated *or* estimation *(message type designator)*
EXC	Except
	F
FL	Flight level
FREQ	Frequency
FRI	Friday
FSS	Flight Service Station
FST	First
FT	Feet *(dimensional unit)*
	G
G	Green
GA	General aviation
GLD	Glider
GND	Ground
GP	Glide Path
GRVL	Gravel
	H
HEL	Helicopter
HGT	Height *or* height above
HLDG	Holding
HLP	Heliport
HVY	Heavy
	I
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IM	Inner Marker
INOP	Inoperative
INT	Intersection
	K
KT	Knots
	L
L	Left *(preceded by runway designator number to identify a parallel runway)*
LAT	Latitude
LDA	Landing Distance Available
LDG	Landing
LEN	Length
LGT	Light *or* lighting
LGTD	Lighted
LOC	Localizer
LONG	Longitude
	M
MAINT	Maintenance
MBST	Microburst
MIL	Military

MIN	Minutes
MNT	Monitor *or* monitoring *or* monitored
MON	Monday
MOV	Move *or* moving *or* movement
	N
N	North
NAVAID	Navigational aid
NB	Northbound
NDB	Nondirectional Radio Beacon
NE	Northeast
NEB	Northeast bound
NM	Nautical Mile/s
NNE	North−northeast
NNW	North−northwest
NOV	November
NW	Northwest
NWB	Northwest bound
	O
OBSC	Obscure *or* obscured *or* obscuring
OBST	Obstacle
OPN	Open *or* opening *or* opened
OPS	Operations
	P
PAPI	Precision Approach Path Indicator
PARL	Parallel
PAX	Passenger/s
PCL	Pilot Controlled Lighting
PCT	Percent
PERM	Permanent
PJE	Parachute Jumping Activities
PLA	Practice Low Approach
PPR	Prior Permission Required
PRN	Pseudo−random Navigation
PT	Procedure Turn
	R
R	Red
R	Right *(preceded by runway designator number to identify a parallel runway)*
RAI	Runway Alignment Indicator
RCL	Runway Centerline
RCLL	Runway Centerline Light
REDL	Runway Edge Light
RLLS	Runway Lead−in Light System
RMK	Remark
RTS	Return to Service
RTZL	Runway Touchdown Zone Light(s)
RVR	Runway Visual Range
RWY	Runway
RX	Receive/Receiver
	S
S	South *or* southern latitude
SA	Sand
SAT	Saturday
SB	Southbound
SE	Southeast
SEC	Seconds
SFC	Surface
SN	Snow
SR	Sunrise
SS	Sunset
SSR	Secondary surveillance radar
SSW	South−southwest
STD	Standard
SUN	Sunday
SW	Southwest
SWB	Southwest bound
	T
TAR	Terminal area surveillance radar
TAX	Taxing *or* taxiing
TDZ	Touchdown Zone
TEMPO	Temporary *or* temporarily
TFC	Traffic
THR	Threshold
THU	Thursday
TKOF	Takeoff
TODA	Take−off Distance Available
TORA	Take−off Run Available
TRG	Training
TUE	Tuesday
TWR	Aerodrome Control Tower
TWY	Taxiway
TX	Taxilane
	U
U/S	Unserviceable
UAS	Unmanned Aircraft System
UNL	Unlimited
UNREL	Unreliable
	V
VIS	Visibility
VOR	VHF Omni-Directional Radio Range
VORTAC	VOR and TACAN (collocated)
VOT	VOR Test Facility
	W
W	West *or* western longitude
WB	Westbound
WDI	Wind Direction Indicator
WED	Wednesday
WI	Within
WID	Width *or* wide
WIP	Work in progress
WNW	West−northwest
WS	Wind shear
WSW	West−southwest

4. Operational Information System (OIS)

4.1 The FAA's Air Traffic Control System Command Center (ATCSCC) maintains a website with near real−time National Airspace System (NAS) status information. NAS operators are encouraged to access the website at www.fly.faa.gov prior to filing their flight plan.

4.1.1 The website consolidates information from advisories. An advisory is a message that is disseminated electronically by the ATCSCC that contains information pertinent to the NAS.

4.1.1.1 Advisories are normally issued for the following items:

a) Ground Stops.

b) Ground Delay Programs.

c) Route Information.

d) Plan of Operations.

e) Facility Outages and Scheduled Facility Outages.

f) Volcanic Ash Activity Bulletins.

g) Special Traffic Management Programs.

4.1.1.2 This list is not all−inclusive. Any time there is information that may be beneficial to a large number of people, an advisory may be sent. Additionally, there may be times when an advisory is not sent due to workload or the short length of time of the activity.

4.1.1.3 Route information is available on the website and in specific advisories. Some route information, subject to the 56−day publishing cycle, is located on the "OIS" under "Products," Route Management Tool (RMT), and "What's New" Playbook. The RMT and Playbook contain routings for use by Air Traffic and NAS operators when they are coordinated "real−time" and are then published in an ATCSCC advisory.

4.1.1.4 Route advisories are identified by the word "Route" in the header; the associated action is required (RQD), recommended (RMD), planned (PLN), or for your information (FYI). Operators are expected to file flight plans consistent with the Route RQD advisories.

4.1.1.5 Electronic System Impact Reports are on the intranet at http://www.atcscc.faa.gov/ois/ under "System Impact Reports." This page lists scheduled outages/events/projects that significantly impact the NAS; for example, runway closures, air shows, and construction projects. Information includes anticipated delays and traffic management initiatives (TMI) that may be implemented.

5. Flight Plan – VFR Flights

(See Appendix 1, FAA Form 7233−4 – International Flight Plan)

5.1 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.

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

5.1.2 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).

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

5.1.4 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.

5.2 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.

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

5.4 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.

5.5 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.

5.6 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.

5.7 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.

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

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

5.10 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.

6. Flight Plan – IFR Flights

(See Appendix 1, FAA Form 7233−4 – International Flight Plan)

6.1 General

6.1.1 Use of FAA Form 7233−4 or DD Form 1801 is mandatory for:

6.1.1.1 Assignment of RNAV SIDs and STARs or other PBN routing,

6.1.1.2 All IFR flights that will depart U.S. domestic airspace, and

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

6.1.1.4 All military/DOD IFR flights that will depart U.S. controlled airspace.

6.1.2 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.

6.1.3 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 1, FAA Form 7233−4, International Flight Plan.

6.1.4 ATC issues clearances based on aircraft capabilities filed in Items 10 and 18 of FAA Form 7233−4. 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 M1or M3 is filed in Item 10.

6.1.5 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.

6.1.6 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.

6.1.7 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).

6.1.8 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.

6.1.9 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.

6.1.10 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.

6.1.11 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.

6.1.12 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.

6.2 Airways and Jet Routes Depiction on Flight Plan

6.2.1 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.

6.2.2 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.*

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.*

6.2.3 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.

6.2.4 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.

6.2.5 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.

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

REFERENCE−
AIP, ENR 1.5, Para 3, Standard Terminal Arrival (STAR) Procedures.
AIP, ENR 1.5, Para 37, Instrument Departure Procedures (DP) − Obstacle Departure Procedures (ODP), Standard Instrument Departures (SID), and Diverse Vector Areas (DVA).

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

6.3 Direct Flights

6.3.1 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.

6.3.2 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−
AIP, GEN 3.4, Para 3.1.4, NAVAID Service Volumes.

6.3.3 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:

6.3.3.1 Operations above FL 450 − Use aids not more than 200 NM apart. These aids are depicted on en route high altitude charts.

6.3.3.2 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.

6.3.3.3 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.

6.3.3.4 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.

6.3.4 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.

6.3.5 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.

6.3.6 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.

6.3.7 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.

6.4 Area Navigation (RNAV)/Global Navigation Satellite System (GNSS)

6.4.1 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.

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

6.4.1.2 ATC will protect 4 miles either side of the route centerline.

6.4.1.3 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.

6.4.2 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:

6.4.2.1 File airport−to−airport flight plans.

6.4.2.2 File the appropriate indication of RNAV and/or RNP capability in the flight plan.

6.4.2.3 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.

6.4.2.4 File route structure transitions to and from the random route portion of the flight.

6.4.2.5 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.

6.4.2.6 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.

6.4.2.7 File an additional route description waypoint for each turn point in the route.

6.4.2.8 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.

6.4.2.9 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.

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

6.4.3.1 File airport−to−airport flight plans prior to departure.

6.4.3.2 File the appropriate RNAV capability certification suffix in the flight plan.

6.4.3.3 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.

6.4.3.4 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.

6.4.3.5 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.

6.4.3.6 Record latitude/longitude coordinates by two or four figures describing latitude in degrees followed by a 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.

6.4.3.7 File at FL 390 or above for the random RNAV portion of the flight.

6.4.3.8 Fly all routes/route segments on Great Circle tracks.

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

7. 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 ENR 1.12, National Security and Interception Procedures.

REFERENCE–
14 CFR Part 99, Security Control of Air Traffic.

7.1 DVFR flight plans must be filed using FAA Form 7233−4 or DD Form 1801.

7.2 Enter the letter "D" in Item 8b of FAA Form 7233−4 or DD Form 1801.

7.3 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

8. Single Flights Conducted With Both VFR and IFR Flight Plans

8.1 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.

8.2 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.

8.3 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.

8.4 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.

8.5 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.

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

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

9. Change in Proposed Departure Time

9.1 To prevent computer saturation in the en route environment, parameters have been established to delete proposed departure flight plans which have not been activated. Most centers have this parameter set so as to delete these flight plans a minimum of 2 hours after the proposed departure time or Expect Departure Clearance Time (EDCT). To ensure that a flight plan remains active, pilots whose actual departure time will be delayed 2 hours or more beyond their filed departure time, are requested to notify ATC of their new proposed departure time.

9.2 Due to traffic saturation, ATC personnel frequently will be unable to accept these revisions via radio. It is recommended that you forward these revisions to a flight plan service provider or FSS.

10. Other Changes

10.1 In addition to altitude/flight level, destination, and/or route changes, increasing or decreasing the speed of an aircraft constitutes a change in a flight plan. Therefore, at any time the average true airspeed at cruising altitude between reporting points varies or is expected to vary from that given in the flight plan by plus or minus 5 percent, or 10 knots, whichever is greater, air traffic control should be advised.

11. Canceling Flight Plans

11.1 Closing VFR and DVFR Flight Plans

11.1.1 A pilot is responsible for ensuring that his/her VFR or DVFR flight plan is canceled. You should close your flight plan with the nearest FSS, or if one is not available, you may request any ATC facility to relay your cancellation to the FSS. Control towers do not automatically close VFR or DVFR flight plans as they may not be aware that a particular VFR aircraft is on a flight plan. If you fail to report or cancel your flight plan within $^1/_2$ hour after your ETA, search and rescue procedures are started.

11.2 Canceling IFR Flight Plan

11.2.1 14 CFR Section 91.153 includes the statement "When a flight plan has been activated, the pilot in command, upon canceling or completing the flight under the flight plan, must notify an FAA Flight Service Station or ATC facility."

11.2.2 An IFR flight plan may be canceled at any time the flight is operating in VFR conditions outside Class A airspace by the pilot stating "CANCEL MY IFR FLIGHT PLAN" to the controller or air/ground station with which he/she is communicating. Immediately after canceling an IFR flight plan, a pilot should take necessary action to change to the appropriate air/ground frequency, VFR radar beacon code, and VFR altitude or flight level.

11.2.3 ATC separation and information services will be discontinued, including radar services (where applicable). Consequently, if the canceling flight desires VFR radar advisory service, the pilot must specifically request it.

NOTE−
Pilots must be aware that other procedures may be applicable to a flight that cancels an IFR flight plan within an area where a special program, such as a designated terminal radar service area, Class C airspace or Class B airspace, has been established.

11.2.4 If a DVFR flight plan requirement exists, the pilot is responsible for filing this flight plan to replace the canceled IFR flight plan. If a subsequent IFR operation becomes necessary, a new IFR flight plan must be filed and an ATC clearance obtained before operating in IFR conditions.

11.2.5 If operating on an IFR flight plan to an airport with a functioning control tower, the flight plan is automatically closed upon landing.

11.2.6 If operating on an IFR flight plan to an airport where there is no functioning control tower, the pilot must initiate cancellation of the IFR flight plan. This can be done after landing if there is a functioning FSS or other means of direct communications with ATC. In the event there is no FSS and air/ground communications with ATC is not possible below a certain altitude, the pilot would, weather conditions permitting, cancel his/her IFR flight plan while still airborne and able to communicate with ATC by radio. This will not only save the time and expense of canceling the flight plan by telephone but will quickly release the airspace for use by other aircraft.

11.3 RNAV and RNP Operations

11.3.1 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 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.

11.3.2 If a pilot determines a specified RNP level cannot be achieved, revise the route or delay the operation until appropriate RNP level can be ensured.

11.3.3 The onboard navigation database must be current and appropriate for the region of intended operation and must include the navigation aids, waypoints, and coded terminal airspace procedures for the departure, arrival and alternate airfields.

11.3.4 During system initialization, pilots of aircraft equipped with a Flight Management System or other RNAV−certified system, must confirm that the navigation database is current, and verify that the aircraft position has been entered correctly. Flight crews should crosscheck the cleared flight plan against charts or other applicable resources, as well as the navigation system textual display and the aircraft map display. This process includes confirmation of the waypoints sequence, reasonableness of track angles and distances, any altitude or speed constraints, and identification of fly−by or fly−over waypoints. A procedure must not be used if validity of the navigation database is in doubt.

11.3.5 Prior to commencing takeoff, the flight crew must verify that the RNAV system is operating correctly and the correct airport and runway data have been loaded.

11.3.6 During the pre−flight planning phase RAIM prediction must be performed if TSO−C129() equipment is used to solely satisfy the RNAV and RNP requirement. GPS RAIM availability must be confirmed for the intended route of flight (route and time) using current GPS satellite information. In the event of a predicted, continuous loss of RAIM of more than five (5) minutes for any part of the intended flight, the flight should be delayed, canceled, or re−routed where RAIM requirements can be met. Operators may satisfy the predictive RAIM requirement through any one of the following methods:

11.3.6.1 Operators may monitor the status of each satellite in its plane/slot position, by accounting for the latest GPS constellation status (e.g., NOTAMs or NANUs), and compute RAIM availability using model−specific RAIM prediction software;

11.3.6.2 Operators may use the Service Availability Prediction Tool (SAPT) on the FAA en route and terminal RAIM prediction website;

11.3.6.3 Operators may contact a Flight Service Station to obtain non−precision approach RAIM;

11.3.6.4 Operators may use a third party interface, incorporating FAA/VOLPE RAIM prediction data without altering performance values, to predict RAIM outages for the aircraft's predicted flight path and times;

11.3.6.5 Operators may use the receiver's installed RAIM prediction capability (for TSO−C129a/Class A1/B1/C1 equipment) to provide non−precision approach RAIM, accounting for the latest GPS constellation status (e.g., NOTAMs or NANUs). Receiver non−precision approach RAIM should be checked at airports spaced at intervals not to exceed 60 NM along the RNAV 1 procedure's flight track. "Terminal" or "Approach" RAIM must be available at the ETA over each airport checked; or

11.3.6.6 Operators not using model−specific software or FAA/VOLPE RAIM data will need FAA operational approval.

NOTE−
If TSO−C145/C146 equipment is used to satisfy the RNAV and RNP requirement, the pilot/operator need not perform the prediction if WAAS coverage is confirmed to be available along the entire route of flight. Outside the U.S. or in areas where WAAS coverage is not available, operators using TSO−C145/C146 receivers are required to check GPS RAIM availability.

12. IFR Operations To High Altitude Destinations

12.1 Pilots planning IFR flights to airports located in mountainous terrain are cautioned to consider the necessity for an alternate airport even when the forecast weather conditions would technically relieve them from the requirement to file one.

12.2 The FAA has identified three possible situations where the failure to plan for an alternate airport when flying IFR to such destination airport could result in a critical situation if the weather is less than forecast and sufficient fuel is not available to proceed to a suitable airport.

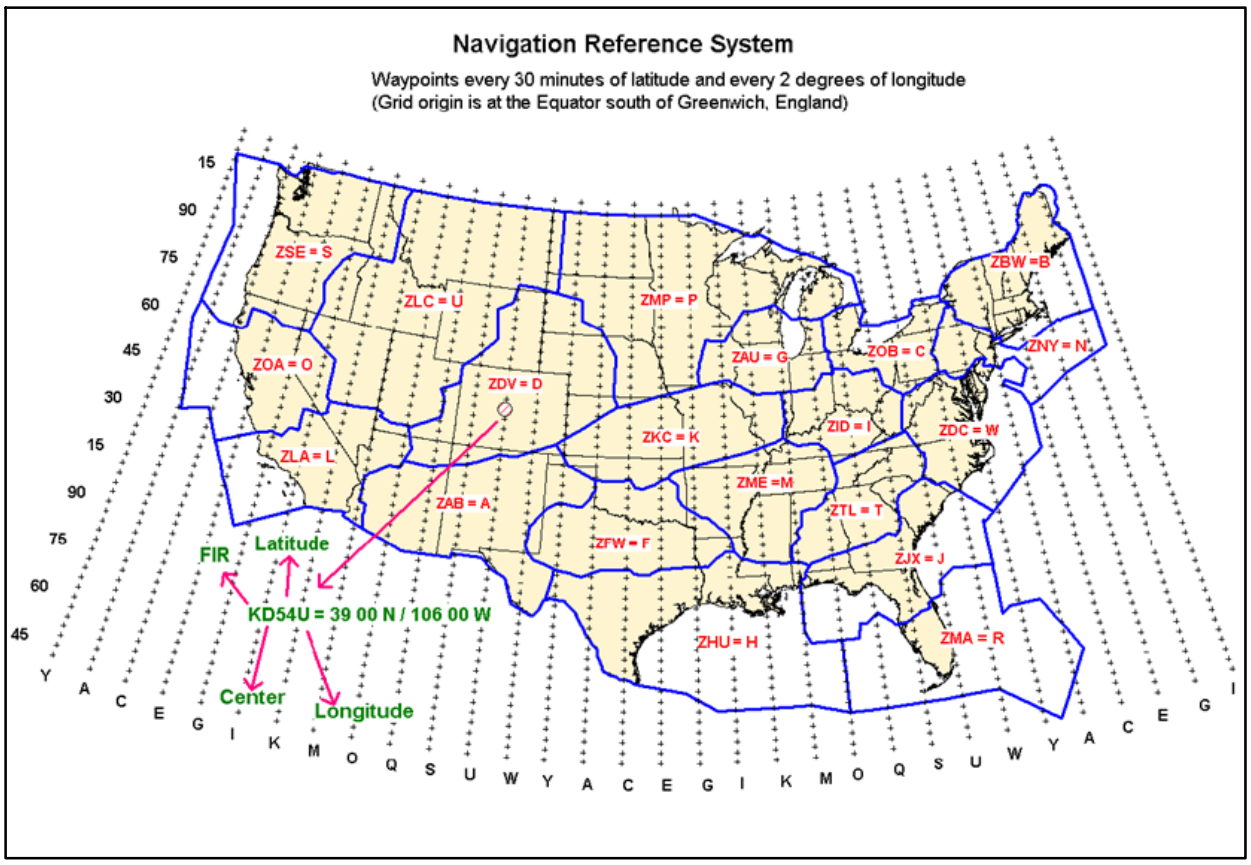
12.2.1 An IFR flight to an airport where the Minimum Descent Altitudes (MDAs) or landing visibility minimums for *all instrument approaches* are higher than the forecast weather minimums specified in 14 CFR Section 91.167(b). For example, there are 3 high altitude airports in the U.S. with approved instrument approach procedures where all of the MDAs are greater than 2,000 feet and/or the landing visibility minimums are greater than 3 miles (Bishop, California; South Lake Tahoe, California; and Aspen−Pitkin Co/Sardy Field, Colorado). In the case of these airports, it is possible for a pilot to elect, on the basis of forecasts, not to carry sufficient fuel to get to an alternate when the ceiling and/or visibility is actually lower than that necessary to complete the approach.

12.2.2 A small number of other airports in mountainous terrain have MDAs which are slightly (100 to 300 feet) below 2,000 feet AGL. In situations where there is an option as to whether to plan for an alternate, pilots should bear in mind that just a slight worsening of the weather conditions from those forecast could place the airport below the published IFR landing minimums.

12.2.3 An IFR flight to an airport which requires special equipment; i.e., DME, glide slope, etc., in order to make the available approaches to the lowest minimums. Pilots should be aware that all other minimums on the approach charts may require weather conditions better than those specified in 14 CFR Section 91.167(b). An inflight equipment malfunction could result in the inability to comply with the published approach procedures or, again, in the position of having the airport below the published IFR landing minimums for all remaining instrument approach alternatives.

FIG ENR 4.4–1

National Reference System (NRS) Alphanumeric Code Depiction



just flying through, it is recommended that extra vigilance be maintained and that you monitor an appropriate control frequency. Normally the appropriate frequency is an approach control frequency. By such monitoring action you can "get the picture" of the traffic in your area. When the approach controller has radar, traffic advisories may be given to VFR pilots who request them, subject to the provisions included in ENR 1.1, paragraph 38, Surveillance Systems, subparagraph 38.10.4, Radar Traffic Information Service (RTIS).

2.4 Obstructions to Flight

2.4.1 General.

2.4.1.1 Many structures exist that could significantly affect the safety of your flight when operating below 500 feet above ground level (AGL), and particularly below 200 feet AGL. While 14 CFR section 91.119 allows flight below 500 feet AGL when over sparsely populated areas or open water, such operations involve increased safety risks. At and below 200 feet AGL there are numerous power lines, antenna towers, etc., that are not marked and lighted and/or charted as obstructions and, therefore, may not be seen in time to avoid a collision. 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. Additionally, new obstructions may not be on current charts because the information was not received prior to the FAA publishing the chart.

2.4.2 Antenna Towers.

2.4.2.1 Extreme caution should be exercised when flying less than 2,000 feet above ground level (AGL) because of numerous skeletal structures, such as radio and television antenna towers, that exceed 1,000 feet AGL with some extending higher than 2,000 feet AGL. Most skeletal structures are supported by guy wires that are very difficult to see in good weather and can be invisible at dusk or during periods of reduced visibility. These wires can extend about 1,500 feet horizontally from a structure; therefore, all skeletal structures should be avoided horizontally by at least 2,000 feet.

2.4.3 Overhead Wires.

2.4.3.1 Overhead transmission and utility lines often span approaches to runways, natural flyways such as lakes, rivers, gorges, and canyons, and cross other landmarks pilots frequently follow such as highways, railroad tracks, etc. As with antenna towers, these power transmission and/or utility lines and the supporting structures of these lines may not always be readily visible. The wires may be virtually impossible to see under certain conditions. Spherical markers may be used to identify overhead wires and catenary transmission lines and may be lighted. In some locations, the supporting structures of overhead transmission lines are equipped with unique sequence flashing white strobe light systems to indicate that there are wires between the structures. The flash sequence for the wire support structures will be middle,top, and bottom with all lights on the same level flashing simultaneously. However, not all power transmission and/or utility lines require notice to the FAA as they do not exceed 200 feet AGL or meet the obstruction standard of 14 CFR part 77 and, therefore, are not marked and/or lighted. All pilots are cautioned to remain extremely vigilant for power transmission and/or utility lines and their supporting structures when following natural flyways or during the approach and landing phase. This is particularly important for seaplane and/or float equipped aircraft when landing on, or departing from, unfamiliar lakes or rivers.

2.4.4 Wind Turbines.

2.4.4.1 The number, size, and height of individual wind turbines and wind turbine farms have increased over time. The locations of wind turbine farms have also expanded to more commonly flown areas by VFR pilots and to all regions of the United States. VFR pilots should be aware that many wind turbines are exceeding 499 feet AGL in height, which may affect minimum safe VFR altitudes in uncontrolled airspace. In addition, many wind turbines are encroaching on the 700–foot AGL floor of controlled airspace (Class E). Pilots are cautioned to maintain appropriate safe distance (laterally, vertically, or both). Wind turbines are typically charted on Visual Flight Rules (VFR) Sectional Charts and/or Terminal Area Charts. For a description of how wind turbines and wind turbine farms are charted, refer to the FAA Aeronautical Chart User's Guide.
http://www.faa.gov/air_traffic/flight_info/aeronav/

2.4.4.2 Wind turbines are normally painted white or light gray to improve daytime conspicuity. They are typically lit with medium−intensity, flashing red lights, placed as high as possible on the turbine nacelle (not the blade tips), that should be synchronized to flash together; however, not all wind turbine units within a farm need to be lighted, depending on their location and height. Sometimes, only the perimeter of the wind turbine farm and an arrangement of interior wind turbines are lit. Some wind turbine farms use Aircraft Detection Lighting Systems (ADLS), which are proximity sensor−based systems designed to detect aircraft as they approach the obstruction. This system automatically activates the appropriate obstruction lights until they are no longer needed based on the position of the transiting aircraft. This technology reduces the impact of nighttime lighting on nearby communities and migratory birds and extends the life expectancy of the obstruction lights. For more information on how obstructions such as wind turbines are marked and lighted, refer to FAA Advisory Circular 70/7460−1, Obstruction Marking and Lighting. Pilots should be aware that wind turbines in motion could result in limitations of air traffic services in the vicinity of the wind turbine farms.

REFERENCE−
AIP, ENR 1.1, Para 38, Surveillance Systems, Subpara 38.1, Radar.

2.4.5 Meteorological Towers.

2.4.5.1 Meteorological towers are used by wind energy companies to determine feasible sites for wind turbines. Some of these towers are less than 200 feet AGL. These structures are portable, erected in a matter of hours, installed with guyed wires, and constructed from a galvanized material often making them difficult to see in certain atmospheric conditions. Markings for these towers include alternating bands of aviation orange and white paint, and high−visibility sleeves installed on the outer guy wires. However, not all meteorological towers follow these guidelines, and pilots should be vigilant when flying at low altitude in remote or rural areas.

2.4.6 Other Objects/Structures.

2.4.6.1 There are other objects or structures that could adversely affect your flight such as temporary construction cranes near an airport, newly constructed buildings, new towers, etc. Many of these structures do not meet charting requirements or may not yet be charted because of the charting cycle. Some structures do not require obstruction marking and/or lighting, and some may not be marked and lighted even though the FAA recommended it. VFR Pilots should carefully review NOTAMs for temporary or permanent obstructions along the planned route of flight during their preflight preparations. Particular emphasis should be given to obstructions in the vicinity of the approach and departure ends of the runway complex or any other areas where flight below 500 feet AGL is planned or likely to occur.

2.5 Unmanned Balloons

2.5.1 The majority of unmanned free balloons currently being operated have, extended below them, either a suspension device to which the payload or instrument package is attached, or a trailing wire antenna, or both. In many instances these balloon subsystems may be invisible to the pilot until his/her aircraft is close to the balloon, thereby creating a potentially dangerous situation. Therefore, good judgment on the part of the pilot dictates that aircraft should remain well clear of all unmanned free balloons and flight below then should be avoided at all times.

2.5.2 Pilots are urged to report any unmanned free balloons sighted to the nearest FAA ground facility with which communication is established. Such information will assist FAA ATC facilities to identify and flight follow unmanned free balloons operating in the airspace.

2.6 Unmanned Aircraft Systems (UAS)

2.6.1 UAS (formerly referred to as “Unmanned Aerial Vehicles” (UAVs) and recently referred to as “drones”) are having an increasing operational presence in the NAS. Once the exclusive domain of the military, UAS are now being operated by various entities. (refer to ENR 8. UNMANNED AIRCRAFT SYSTEMS (UAS) for additional information) Although these aircraft are “unmanned,” UAS are flown by a remotely located pilot and crew. Physical and performance characteristics of unmanned aircraft (UA) vary greatly and unlike small UAS that typically operate at or below 400 feet AGL, larger Unmanned Aircraft (UA) may be found operating at virtually any altitude. Sizes of UA can be as small as several pounds to as large as a commercial transport aircraft.

UAS come in various categories including airplane, rotorcraft, powered–lift (tilt–rotor), and lighter–than–air. Propulsion systems of UAS include a broad range of alternatives from piston powered and turbojet engines to battery and solar–powered electric motors.

2.6.2 UAS operations may be approved in either controlled or uncontrolled airspace. In all cases, approved UAS operations must comply with all applicable regulations and/or special provisions specified in the applicable FAA approval documents. At uncontrolled airports, UAS operations are advised to operate well clear of all known manned aircraft operations. Pilots of manned aircraft are advised to follow normal operating procedures and are urged to monitor the CTAF for any potential UAS activity. At controlled airports, local ATC procedures may be in place to handle UAS operations and should not require any special procedures from manned aircraft entering or departing the traffic pattern or operating in the vicinity of the airport.

2.6.3 There are several factors a pilot should consider regarding UAS activity in an effort to reduce potential flight hazards. Pilots are urged to exercise increased vigilance when operating in the vicinity of restricted or other special use airspace, military operations areas, and any military installation. Since the size of a UA can be very small, they may be difficult to see and track. If a UA is encountered during flight, as with any aircraft, never assume that the pilot or crew of the other aircraft can see you, maintain increased vigilance and always be prepared for evasive action if necessary. Always check NOTAMs for potential UAS activity along the intended route of flight and exercise increased vigilance in areas specified in the NOTAM.

2.7 Mountain Flying

2.7.1 Your first experience of flying over mountainous terrain (particularly if most of your flight time has been over the flatlands of the Midwest) could be a never–to–be–forgotten nightmare if proper planning is not done and if you are not aware of the potential hazards awaiting. Those familiar section lines are not present in the mountains; those flat, level fields for forced landings are practically nonexistent; abrupt changes in wind direction and velocity occur; severe updrafts and downdrafts are common, particularly near or above abrupt changes of terrain such as cliffs or rugged areas; even the clouds look different and can build up with startling rapidity. Mountain flying need not be hazardous if you follow the recommendations below:

2.7.1.1 File a Flight Plan. Plan your route to avoid topography that would prevent a safe forced landing. The route should be over populated areas and well–known mountain passes. Sufficient altitude should be maintained to permit gliding to a safe landing in the event of engine failure.

2.7.1.2 Don’t fly a light aircraft when the winds aloft, at your proposed altitude, exceed 35 miles per hour. Expect the winds to be of much greater velocity over mountain passes than reported a few miles from them. Approach mountain passes with as much altitude as possible. Downdrafts of 1,500 to 2,000 feet per minute are not uncommon on the leeward side.

2.7.1.3 Don’t fly near or above abrupt changes in terrain. Severe turbulence can be expected, especially in high wind conditions.

2.7.1.4 Understand Mountain Obscuration (MTOS). The term MTOS is used to describe a visibility condition that is distinguished from IFR because ceilings, by definition, are described as “above ground level” (AGL). In mountainous terrain clouds can form at altitudes significantly higher than the weather reporting station and at the same time nearby mountaintops may be obscured by low visibility. In these areas the ground level can also vary greatly over a small area. Beware if operating VFR–on–top. You could be operating closer to the terrain than you think because the tops of mountains are hidden in a cloud deck below. MTOS areas are identified daily on the Aviation Weather Center website: https://aviationweather.gov/.

2.7.2 Navigating in confined terrain when flying through mountain passes can be challenging. For high–traffic mountain passes, VFR checkpoints may be provided on VFR navigation charts to increase situational awareness by indicating key landmarks inside confined terrain. A collocated VFR waypoint and checkpoint may be provided to assist with identifying natural entry points for commonly flown mountain passes. Pilots should reference the name of the charted VFR checkpoint, wherever possible, when making position reports on CTAF frequencies to reduce the risk of midair collisions. Pilots should evaluate the terrain along the route they intend

to fly with respect to their aircraft type and performance capabilities, local weather, and their experience level to avoid flying into confined areas without adequate room to execute a 180−degree turn, should conditions require. Always fly with a planned escape route in mind.

2.7.3 VFR flight operations may be conducted at night in mountainous terrain with the application of sound judgment and common sense. Proper preflight planning, giving ample consideration to winds and weather, knowledge of the terrain, and pilot experience in mountain flying are prerequisites for safety of flight. Continuous visual contact with the surface and obstructions is a major concern and flight operations under an overcast or in the vicinity of clouds should be approached with extreme caution.

2.7.4 When landing at a high−altitude field, the same indicated airspeed should be used as at low elevation fields. Remember: due to the less dense air at altitude, this same indicated airspeed results in a higher true airspeed, a faster landing speed, and more important, a longer landing distance. During gusty wind conditions which often prevail at high altitude fields, a power approach and power landing is recommended. Additionally, due to the faster groundspeed, your takeoff distance will increase considerably over that required at low altitudes.

2.7.5 Effects of Density Altitude. Performance figures in the aircraft owner's handbook for length of takeoff run, horsepower, rate of climb, etc., are generally based on standard atmosphere conditions (59°F, pressure 29.92 inches of mercury) at sea level. However, inexperienced pilots as well as experienced pilots may run into trouble when they encounter an altogether different set of conditions. This is particularly true in hot weather and at higher elevations. Aircraft operations at altitudes above sea level and at higher than standard temperatures are commonplace in mountainous area. Such operations quite often result in a drastic reduction of aircraft performance capabilities because of the changing air density. Density altitude is a measure of air density. It is not to be confused with pressure altitude—true altitude or absolute altitude. It is not to be used as a height reference, but as a determining criterion in the performance capability of an aircraft. Air density decreases with altitude. As air density decreases, density altitude increases. The further effects of high temperature and high humidity are cumulative, resulting in an increasing high density altitude condition. High density altitude reduces all aircraft performance parameters. To the pilot, this means that the normal horsepower output is reduced, propeller efficiency is reduced, and a higher true airspeed is required to sustain the aircraft throughout its operating parameters. It means an increase in runway length requirements for takeoff and landings, and a decreased rate of climb. An average small airplane, for example, requiring 1,000 feet for takeoff at sea level under standard atmospheric conditions will require a takeoff run of approximately 2,000 feet at an operational altitude of 5,000 feet.

NOTE−
A turbo−charged aircraft engine provides some slight advantage in that it provides sea level horsepower up to a specified altitude above sea level.

2.7.6 Density Altitude Advisories. At airports with elevations of 2,000 feet and higher, control towers and FSSs will broadcast the advisory "Check Density Altitude" when the temperature reaches a predetermined level. These advisories will be broadcast on appropriate tower frequencies or, where available, automatic terminal information service (ATIS). FSSs will broadcast these advisories as a part of airport advisory.

2.7.6.1 These advisories are provided by air traffic facilities as a reminder to pilots that high temperatures and high field elevations will cause significant changes in aircraft characteristics. The pilot retains the responsibility to compute density altitude, when appropriate, as a part of preflight duties.

NOTE−
All FSSs will compute the current density altitude upon request.

2.8 Use of Runway Half−Way Signs at Unimproved Airports

2.8.1 When installed, runway half−way signs provide the pilot with a reference point to judge takeoff acceleration trends. Assuming that the runway length is appropriate for takeoff (considering runway condition and slope, elevation, aircraft weight, wind, and temperature), typical takeoff acceleration should allow the airplane to reach 70 percent of lift−off airspeed by the midpoint of the runway. The "rule of thumb" is that should

airplane acceleration not allow the airspeed to reach this value by the midpoint, the takeoff should be aborted, as it may not be possible to liftoff in the remaining runway.

2.8.2 Several points are important when considering using this “rule of thumb”:

2.8.2.1 Airspeed indicators in small airplanes are not required to be evaluated at speeds below stalling and may not be usable at 70 percent of liftoff airspeed.

2.8.2.2 This “rule of thumb” is based on a uniform surface condition. Puddles, soft spots, areas of tall and/or wet grass, loose gravel, etc., may impede acceleration or even cause deceleration. Even if the airplane achieves 70 percent of liftoff airspeed by the midpoint, the condition of the remainder of the runway may not allow further acceleration. The entire length of the runway should be inspected prior to takeoff to ensure a usable surface.

2.8.2.3 This “rule of thumb” applies only to runway required for actual liftoff. In the event that obstacles affect the takeoff climb path, appropriate distance must be available after liftoff to accelerate to best angle of climb speed and to clear the obstacles. This will, in effect, require the airplane to accelerate to a higher speed by midpoint, particularly if the obstacles are close to the end of the runway. In addition, this technique does not take into account the effects of upslope or tailwinds on takeoff performance. These factors will also require greater acceleration than normal and, under some circumstances, prevent takeoff entirely.

2.8.2.4 Use of this “rule of thumb” does not alleviate the pilot’s responsibility to comply with applicable Federal Aviation Regulations (FARs), the limitations and performance data provided in the FAA approved Airplane Flight Manual (AFM), or, in the absence of an FAA−approved AFM, other data provided by the aircraft manufacturer.

2.8.3 In addition to their use during takeoff, runway half−way signs offer the pilot increased awareness of his or her position along the runway during landing operations.

NOTE−
No FAA standard exists for the appearance of the runway half−way sign. FIG ENR 5.3−1 shows a graphical depiction of a typical runway half−way sign.

FIG ENR 5.3−1
Typical Runway

2.9 Mountain Wave

2.9.1 Many pilots go all their lives without understanding what a mountain wave is. Quite a few have lost their lives because of this lack of understanding. One need not be a licensed meteorologist to understand the mountain wave phenomenon.

2.9.2 Mountain waves occur when air is being blown over a mountain range or even the ridge of a sharp bluff area. As the air hits the upwind side of the range, it starts to climb, thus creating what is generally a smooth updraft which turns into a turbulent downdraft as the air passes the crest of the ridge. From this point, for many miles downwind, there will be a series of downdrafts and updrafts. Satellite photos of the Rockies have shown mountain waves extending as far as 700 miles downwind of the range. Along the east coast area, such photos of the Appalachian chain have picked up the mountain wave phenomenon over a hundred miles eastward. All it takes to form a mountain wave is wind blowing across the range at 15 knots or better at an intersection angle of not less than 30 degrees.

2.9.3 Pilots from flatland areas should understand a few things about mountain waves in order to stay out of trouble. Approaching a mountain range from the upwind side (generally the west), there will usually be a smooth updraft; therefore, it is not quite as dangerous an area as the lee of the range. From the leeward side, it is always a good idea to add an extra thousand feet or so of altitude because downdrafts can exceed the climb capability of the aircraft. Never expect an updraft when approaching a mountain chain from the leeward. Always be prepared to cope with a downdraft and turbulence.

2.9.4 When approaching a mountain ridge from the downwind side, it is recommended that the ridge be approached at approximately a 45° angle to the horizontal direction of the ridge. This permits a safer retreat from the ridge with less stress on the aircraft should severe turbulence and downdraft be experienced. If severe turbulence is encountered, simultaneously reduce power and adjust pitch until aircraft approaches maneuvering speed, then adjust power and trim to maintain maneuvering speed and fly away from the turbulent area.

2.10 Seaplane Safety

2.10.1 Acquiring a seaplane class rating affords access to many areas not available to landplane pilots. Adding a seaplane class rating to your pilot certificate can be relatively uncomplicated and inexpensive. However, more effort is required to become a safe, efficient, competent "bush" pilot. The natural hazards of the backwoods have given way to modern man−made hazards. Except for the far north, the available bodies of water are no longer the exclusive domain of the airman. Seaplane pilots must be vigilant for hazards such as electric power lines, power, sail and rowboats, rafts, mooring lines, water skiers, swimmers, etc.

2.10.2 Seaplane pilots must have a thorough understanding of the right−of−way rules as they apply to aircraft versus other vessels. Seaplane pilots are expected to know and adhere to both the United States Coast Guard's (USCG) Navigation Rules, International−Inland, and Title 14 Code of Federal Regulations (CFR) section 91.115, Right−of−Way Rules: Water Operations. The navigation rules of the road are a set of collision avoidance rules as they apply to aircraft on the water. A seaplane is considered a vessel when on the water for the purposes of these collision avoidance rules. In general, a seaplane on the water must keep well clear of all vessels and avoid impeding their navigation. The CFR requires, in part, that aircraft operating on the water must "…insofar as possible, keep clear of all vessels and avoid impeding their navigation, and shall give way to any vessel or other aircraft that is given the right−of−way…" This means that a seaplane should avoid boats and commercial shipping when on the water. If on a collision course, the seaplane should slow, stop, or maneuver to the right, away from the bow of the oncoming vessel. Also, while on the surface with an engine running, an aircraft must give way to all nonpowered vessels. Since a seaplane in the water may not be as maneuverable as one in the air, the aircraft on the water has right−of−way over one in the air, and one taking off has right−of−way over one landing. A seaplane is exempt from the USCG safety equipment requirements, including the requirements for personal floatation devices (PFDs). Requiring seaplanes on the water to comply with USCG equipment requirements in addition to the FAA equipment requirements would be an unnecessary burden on seaplane owners and operators.

2.10.3 Unless they are under Federal jurisdiction, navigable bodies of water are under the jurisdiction of the state, or in a few cases, privately owned. Unless they are specifically restricted, aircraft have as much right to

3.1.1 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."

3.1.1.1 "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.

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

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

3.1.1.4 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 Section ENR 1.10, paragraph 11.2, Canceling IFR Flight Plan.

3.1.1.5 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:

a) FATO or FATO lights.

b) TLOF or TLOF lights.

c) Heliport Instrument Lighting System (HILS).

d) Heliport Approach Lighting System (HALS).

e) Visual Glideslope Indicator (VGSI).

f) Windsock or windsock light.

g) Heliport beacon.

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

3.1.2 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."

3.1.2.1 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.

3.1.2.2 Visual contact with the landing area 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.

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

3.1.2.4 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 Section ENR 1.10, paragraph 11.2, Canceling IFR Flight Plan.

3.1.2.5 If the visual segment penetrates Class B, C, or D airspace, pilots are responsible for obtaining a Special VFR clearance, when required.

4. The Gulf of America Grid System

4.1 The Gulf of America Grid System navigational route structure is completely independent of ground−based navigation aids (NAVAID) and was designed to facilitate helicopter IFR operations to offshore destinations. The Grid System is defined by over 300 offshore waypoints located 20 minutes apart (latitude and longitude). Flight plan routes are routinely defined by just 4 segments: departure point (lat/long), first en route grid waypoint, last en route grid waypoint prior to approach procedure, and destination point (lat/long). There are over 4,000 possible offshore landing sites (oil rigs, wind turbines, etc.). Upon reaching the waypoint prior to the destination, the pilot may execute an Offshore Standard Approach Procedure (OSAP), a Helicopter En Route Descent Areas (HEDA) approach, or an Airborne Radar Approach (ARA). For more information on these helicopter instrument procedures, refer to FAA AC 90−80, Approval of Offshore Standard Approach Procedures, Airborne Radar Approaches, and Helicopter En Route Descent Areas, on the FAA Advisory Circulars website at https://www.faa.gov/regulations_policies/advisory_circulars/. The return flight plan is just the reverse with the requested stand−alone GPS approach contained in the remarks section.

4.2 The large number (over 300) of waypoints in the grid system makes it difficult to assign phonetically pronounceable names to the waypoints that would be meaningful to pilots and controllers. A unique naming system was adopted that enables pilots and controllers to derive the fix position from the name. The five−letter names are derived as follows:

4.2.1 The waypoints are divided into sets of 3 columns each. A three−letter identifier, identifying a geographical area or a NAVAID to the north, represents each set.

4.2.2 Each column in a set is named after its position, i.e., left (L), center (C), and right (R).

4.2.3 The rows of the grid are named alphabetically from north to south, starting with A for the northern most row.

EXAMPLE−
LCHRC would be pronounced "Lake Charles Romeo Charlie." The waypoint is in the right−hand column of the Lake Charles VOR set, in row C (third south from the northern most row).

4.3 An infrastructure of ADS−B ground stations, weather stations (AWOS), and VHF remote communication outlets (RCO) exists throughout a large area of the Gulf of America. This infrastructure allows the FAA's Houston ARTCC to provide "domestic−like" air traffic control service in the offshore area beyond 12 NM from the coastline to hundreds of miles offshore to aircraft equipped with ADS−B. Properly equipped aircraft can now be authorized to receive more direct routing, domestic en route separation minima, and real time flight following. Operators who do not have authorization to receive ATC separation services using ADS−B, will continue to use the low altitude grid system and receive procedural separation from Houston ARTCC. Non−ADS−B equipped aircraft also benefit from improved VHF communication and expanded weather information coverage.

4.4 Three requirements must be met for operators to file IFR flight plans utilizing the grid:

4.4.1 The helicopter must be equipped for IFR operations and equipped with IFR approved GPS navigational units.

4.4.2 The operator must obtain prior written approval from the appropriate Flight Standards District Office.

4.4.3 The operator must be a signatory to the Houston ARTCC Letter of Agreement.

4.5 Operators utilizing ADS−B−based ATC separation services must meet the following additional requirements:

4.5.1 The Operator's installed ADS−B must comply with the requirements of 14 CFR sections 91.225 and 91.227.

4.5.2 Flight crews must comply with the procedures prescribed in the Houston ARTCC Letter of Agreement dated March 1, 2018, or later.

NOTE−
The unique ADS−B architecture in the Gulf of America upon reception of an aircraft's Mode C in addition to the other message elements described in 14 CFR 91.227. Flight crews must be made aware that loss of Mode C also means that ATC will not receive the aircraft's ADS−B signal.

4.6 FAA/AIS publishes the grid system waypoints on the IFR Gulf of America Vertical Flight Reference Chart. A commercial equivalent is also available. The chart is updated annually and is available from an FAA print provider or for free download on the AIS website under "Supplemental Charts/Pubs": https://www.faa.gov/air_traffic/flight_info/aeronav/productcatalog/supplementalcharts/.

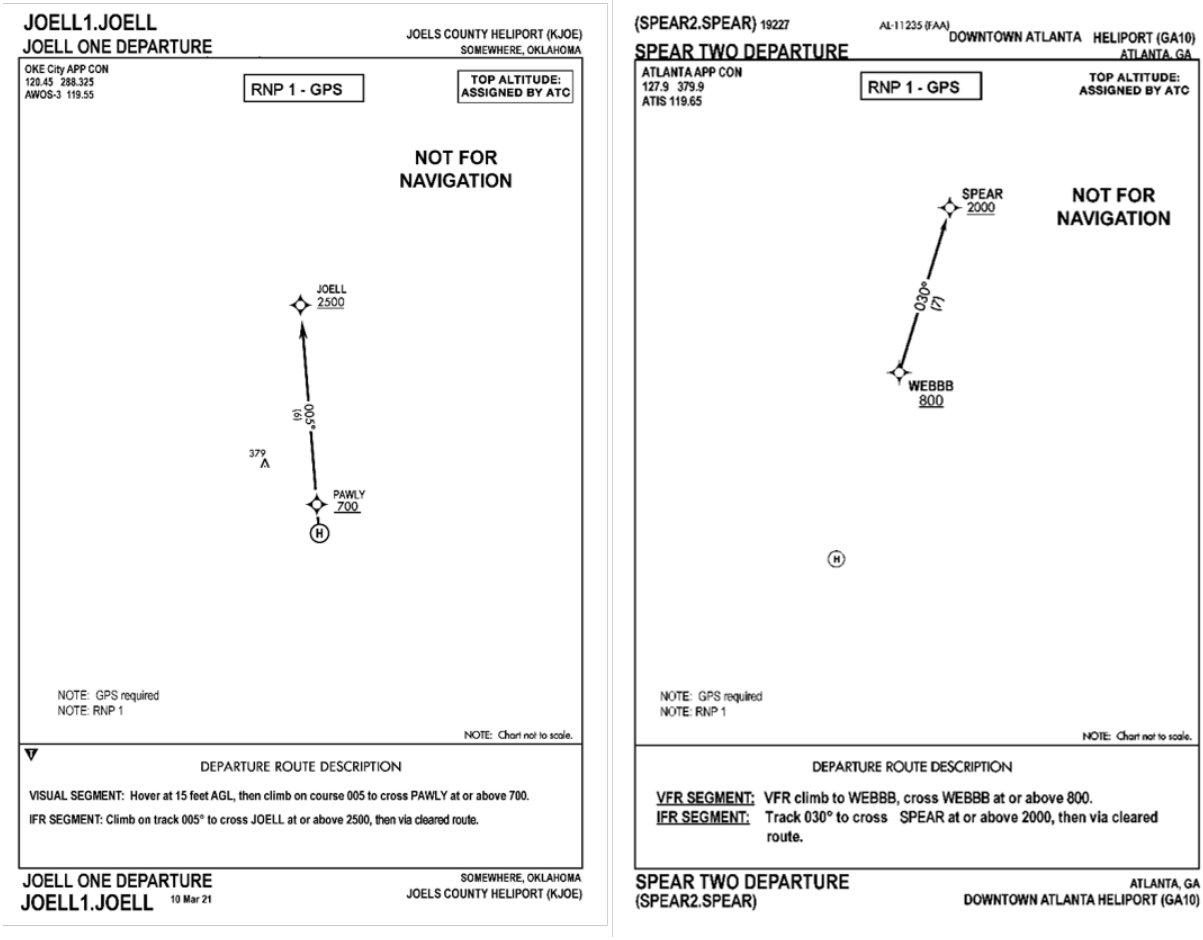
5. Departure Procedures

5.1 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."

5.2 When flying a PinS 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."

5.3 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.

FIG ENR 6.1–1
Departure Charts



REFERENCE–
Aeronautical Information Manual, Chapter 5, Air Traffic Procedures.

6.5.2 The operator must establish procedures to ensure the flight maintains voice communications (that may include SATVOICE and any required HF SELCAL checks) with every ATS unit along the route of flight.

6.5.3 When using SATVOICE, the pilot must follow RTF conventions identical to HF/VHF communications in accordance with applicable standards and regulations pertaining to aeronautical communications.

6.5.4 Satellite service providers have assigned ICAO priority level 2/HGH/Q12 Operational high (second highest) to calls between aircraft and Air Navigation Service Providers. The pilot must verify the priority of the call and act only on ATC clearances/instructions from SATVOICE calls with priority level 2/HGH/Q12, and if in doubt terminate the call and initiate a new call for confirmation.

6.5.5 The pilot must answer SATVOICE calls when contacted either by the ARTCC or RADIO facility.

6.6 The SATVOICE short codes for ARTCCs and RADIO are in accordance with TBL ENR 7.1–2.

TBL ENR 7.1–2
SATVOICE Short Codes for ARTCCs and RADIO Facilities

Oceanic Control Area (OCA)	ATC Direct (only for distress, urgency, other means not available)		ATC via RADIO Facility (when unable to communicate on HF)	
	ARTCC	SATVOICE Short Code	RADIO Facility	SATVOICE Short Code
New York East	New York ARTCC	436695	New York RADIO	436623
New York West	New York ARTCC	436696		
Oakland	Oakland ARTCC	436697	San Francisco RADIO	436625
Anchorage	Anchorage ARTCC	436602		

7. Air–to–Air Frequency

7.1 Houston, San Juan and Miami FIRs

7.1.1 Frequency 123.45 MHz is the approved air–to–air VHF channel within the above FIRs. This frequency will be used for flights operating over remote and oceanic areas out of range of VHF ground stations to exchange necessary operational information and to facilitate the resolution of operational problems.

7.1.2 Frequency 123.45 MHz replaces the previously published frequencies used within the Houston, San Juan, and Miami FIRs. This change is necessary to comply with Amendment 74 to ICAO Annex 10, Volume II, which designated 123.45 as the global standard VHF air–to–air frequency.

8. Strategic Lateral Offset Procedures (SLOP) Within FAA–Controlled Airspace

8.1 These procedures have been developed in accordance with ICAO Document 4444 Procedures for Air Navigation Services – Air Traffic Management, paragraph 16.5.

8.2 The International Civil Aviation Organization (ICAO) has determined that allowing aircraft conducting oceanic flight to fly lateral offsets, in increments of 0.1 nautical mile (NM) up to a maximum of 2 NM right of centerline, will provide an additional safety margin and mitigate the risk of conflict when non–normal events, such as aircraft navigation errors, altitude deviation errors, and turbulence–induced altitude–keeping errors occur.

8.3 Pilots are authorized to use SLOP in the Anchorage Oceanic Control Area (OCA), Anchorage Flight Information Region (FIR), New York OCA, Oakland OCA, the airspace surrounding the island of Bermuda, the

airspace controlled by the Honolulu Control Facility (HCF), and the airspace controlled by the Guam Combined Control Facility (CCF).

NOTE−
Within New York OCA West, pilots are not permitted to use SLOP on airway M201 between points VIRST and VEGAA, nor on airways Y485, Y488, Y493, and Y494.

8.3.1 Pilots should apply an offset outbound after reaching their cruising flight level and retain the offset until the top of descent unless ATC dictates otherwise.

8.3.2 For flights departing Hawaii, pilots should apply SLOP upon reaching their initial cruise flight level and they are within 70 NM of entering the Oakland Oceanic Control Area.

8.3.3 For flights arriving Hawaii, pilots should discontinue SLOP no later than 70 NM after entering HCF airspace, or when receiving radar vectors from HCF, whichever occurs first. Pilots of Hawaiian inter−island flights must not use SLOP.

8.3.4 Aircraft transiting Bermuda airspace, HCF airspace, or Guam CCF airspace may remain on their established offset.

8.3.5 Aircraft flying in the Anchorage FIR may apply SLOP as follows:

8.3.5.1 Throughout the entire Anchorage Arctic FIR.

8.3.5.2 In those portions of the Anchorage Domestic and Anchorage Oceanic FIRs (including offshore control areas) which are more than twelve miles offshore.

8.3.5.3 Over the land area of the Alaska Peninsula west of 160° West longitude.

8.4 Along a route or track there will be 21 positions that an aircraft may fly: on centerline or at increments of 0.1 NM (for example, 0.1, 0.2, 0.3, 0.4...1.8, 1.9, 2.0) right of centerline out to a maximum offset of 2 NM. Offsets must not exceed 2 NM right of centerline. The intent of this procedure is to reduce risk (add safety margin) by distributing aircraft laterally across the 21 available positions.

8.4.1 Pilots must fly the track centerline if their aircraft does not have automatic offset programming capability. Pilots of aircraft unable to offset at 0.1 NM increments should fly on the track centerline, or at the 1.0 NM or 2.0 NM positions right of centerline when using SLOP.

8.4.2 Pilots should also fly one of the available offset positions described above to avoid wake turbulence. Pilots should use whatever means available to determine the best offset to fly. An aircraft overtaking a lower altitude aircraft on the same routing should offset within the confines of this procedure, if capable, so as to create the least amount of wake turbulence for the aircraft being overtaken.

8.4.3 Pilots must not offset to the left of centerline nor offset more than 2 NM right of centerline. They may contact other aircraft on VHF frequency 123.45, as necessary, to coordinate the best wake turbulence offset option.

NOTE−
Pilots should determine the action most appropriate to any given situation and, as always, have final authority and responsibility for the safe operation of the aircraft.

8.4.4 Pilots do not need ATC clearance to use SLOP nor are they required to inform ATC of their intent to use the procedure within the airspace identified in this paragraph.

ENR 7.2 Data Link Procedures

1. Oakland Oceanic Airspace

1.1 Oakland ARTCC has full CPDLC and ADS−C services in the entire Oakland Oceanic FIR for FANS−1/A capable aircraft. The Oakland Oceanic FIR log−on address is "KZAK;" the facility is "OAKODYA." CADS LOGON is not supported.

1.2 The use of CPDLC and ADS−C in the Oakland Oceanic FIR (KZAK) is only permitted by Inmarsat and Iridium customers. All other forms of data link connectivity are not authorized. If J5 (Inmarsat) or J7 (Iridium) is not included in the ICAO FPL Item 10a, then the LOGON will be rejected by KZAK and the aircraft will not be able to connect.

NOTE−
The CPDLC Message Elements used in oceanic data communications operations are contained in TBL ENR 7.2−2 through TBL ENR 7.2−26.

1.3 Prior to entering the Oakland Oceanic FIR, contact San Francisco Radio and request a SELCAL check.

NOTE−
1. *Expect to receive primary and secondary HF frequency assignments from San Francisco Radio for the entire route of flight within the Oakland Oceanic FIR.*

2. *Pilots must maintain HF communications capability with San Francisco Radio at all times within the Oakland Oceanic FIR.*

1.3.1 Regardless of aircraft ADS−C capability, aircraft without a KZAK ADS−C connection must forward a FIR position report and continue HF or CPDLC position reporting until a KZAK ADS−C connection is established.

1.4 Aircraft entering the Oakland Oceanic FIR data link service area from adjacent data link airspace should:

1.4.1 Determine the status of the CPDLC connection. If KZAK is the active center, the pilot must contact San Francisco Radio on HF for a SELCAL check.

1.4.2 If KZAK is not the active center, the pilot must, within 5 minutes after the boundary is crossed, terminate the CPDLC connection, then log on to KZAK, and contact San Francisco Radio on HF for a SELCAL check.

1.5 Flights overflying Honolulu Control Facility (HCF) airspace will receive an END SERVICE message prior to entering HCF airspace that will result in termination of CPDLC. Aircraft must re−log on to CPDLC prior to reentering Oakland Oceanic FIR airspace when HCF advises to contact en route communications or San Francisco Radio.

1.6 Flights overflying Guam Combined Center Radar Approach Control (CCF) airspace should maintain the CPDLC connection with Oakland ARTCC; however, do not use CPDLC for ATC COM until Guam CCF advises you to again contact en route communications or San Francisco Radio.

2. Anchorage Oceanic Airspace

2.1 Anchorage ARTCC has full CPDLC capability and normal service for FANS−1/A capable aircraft within INMARSAT or Iridium coverage.

NOTE−
The CPDLC Message Elements used oceanic data communications operations are contained in TBL ENR 7.2−1 through TBL ENR 7.2−26.

2.1.1 The Anchorage Arctic FIR logon address is "PAZN;" the facility is "ANCXFXA." CADS LOGON is not supported.

2.1.2 The Anchorage Domestic and Oceanic FIRs (South of N63 and west of W165) logon address is "PAZN;" the facility is "ANCATYA." CADS LOGON is not supported.

2.2 Prior to entering the Anchorage Oceanic FIR, contact San Francisco Radio and request a SELCAL check.

NOTE−

1. *HF service in the Anchorage Arctic FIR is provided via Gander Radio. San Francisco Radio maintains an HF Long−Distance Operational Control (LDOC) station at Barrow, Alaska that may be of use when the solar conditions inhibit normal communications via Gander. HF service in the Anchorage Oceanic FIR is provided via San Francisco Radio.*

2. *Expect to receive primary and secondary HF frequency assignments from San Francisco Radio for the entire route of flight when within the Anchorage Oceanic FIR.*

3. *Pilots must maintain HF communications capability with appropriate en route RADIO (San Francisco Radio or Gander) at all times within the Anchorage Arctic or Oceanic FIRs.*

2.3 Regardless of aircraft ADS−C capability, aircraft without a PAZN Anchorage ADS−C connection must forward a FIR position report and continue HF or CPDLC position reporting until an Anchorage ADS−C connection is established.

3. New York Oceanic Airspace

3.1 New York ARTCC provides full CPDLC and ADS−C services throughout its Oceanic Airspace to FANS−1/A capable flights. The New York Oceanic FIR FANS LOGON address is "KZWY." CADS LOGON is not supported. Flights should use ADS−C for position reporting and CPDLC for all other ATC communications while in the New York Oceanic Area.

3.2 The use of CPDLC and ADS−C in the New York Oceanic FIR (KZWY) is only permitted by Inmarsat and Iridium customers. Users must ensure that the proper data link code is filed in Item 10a of the ICAO. If J5 (Inmarsat) or J7 (Iridium) is not included in the ICAO FPL, then the LOGON will be rejected by KZWY and the aircraft will not be able to connect.

NOTE−

The CPDLC Message Elements used oceanic data communications operations are contained in TBL ENR 7.2−1 through TBL ENR 7.2−26.

3.3 Prior to entering the New York Oceanic FIR, contact New York Radio and request a SELCAL check.

NOTE−

1. *Expect to receive primary and secondary HF frequency assignments from New York Radio for the route of flight within the data link service area.*

2. *Pilots must maintain HF communications capability with New York Radio at all times within the New York Oceanic FIR.*

3. *If not filed in the flight plan, NY Radio will request if the flight is CPDLC connected and confirm their exit point from the New York FIR.*

3.3.1 Regardless of aircraft ADS−C capability, aircraft without a KZWY ADS−C connection must forward a position report and continue HF or CPDLC position reporting until a KZWY ADS−C connection is established.

3.4 If the flight will exit the New York Oceanic FIR into domestic airspace (including over New York Bermuda RADAR):

3.4.1 Identify the flight as ADS−C and/or CPDLC connected;

3.4.2 If operating on the North Atlantic Organized Track System (OTS), state the track letter;

3.4.3 State the name of the next CTA/FIR to be entered along with the latitude and longitude or waypoint exit point leaving the New York Oceanic FIR; and

3.4.4 Request a SELCAL check.

NOTE−

New York Radio may require flights to contact them at 60 West for HF frequency updates.

3.5 Aircraft entering the New York Oceanic FIR from non−data link airspace should:

3.5.1 LOGON to KZWY at least 15 minutes but not more than 45 minutes prior to entering the New York Oceanic FIR.

3.5.2 Prior to entering the New York Oceanic FIR contact New York Radio on HF or VHF providing the information as outlined in paragraph 3.3.

NOTE−
Do not send a CPDLC position report to confirm CDA prior to, or upon crossing, the FIR.

3.6 Aircraft entering the New York Oceanic FIR data link service area from adjacent data link airspace should:

3.6.1 Determine the status of the FANS connection when crossing the New York Oceanic FIR boundary. CPDLC and ADS−C services are forwarded automatically between the New York, Santa Maria, Piarco, and Gander OCAs at a pre−determined time (approximately 5 minutes) from CTA/FIR boundary. CPDLC only services are forwarded between New York Oceanic (KZWY) and Moncton ACC. CPDLC connection (via ”Next Data Authority”) is automatically transferred between New York Oceanic (KZWY) and FAA domestic ARTCCs (KUSA).

NOTE−
San Juan Center does not have CPDLC implemented.

3.6.1.1 If KZWY is the active connection when crossing the New York Oceanic FIR boundary the pilot must:

3.6.1.2 Contact New York Radio on HF providing the information as outlined in paragraph 3.3.

3.6.2 If KZWY is not the active center when crossing the New York Oceanic FIR boundary the pilot must:

3.6.2.1 Terminate the CPDLC connection, then log−on to KZWY; and

3.6.2.2 Contact New York Radio on HF providing the information as outlined in paragraph 3.3.

NOTE−
Do not send a CPDLC position report to confirm CDA prior to, or upon crossing, the FIR.

3.7 Aircraft exiting the KZWY data link service area and approaching the New York Center Domestic, New York Center Bermuda RADAR, San Juan, Piarco, Jacksonville, Miami, Moncton, and Gander Domestic can expect a CPDLC uplink message containing the VHF frequency assignment for the next facility. CPDLC End Service will be sent approximately 5 minutes prior to the boundary crossing point.

4. Data Link Failure

4.1 In the event of data link failure or outages, flight crews must contact New York Radio or San Francisco Radio via HF voice for routine communications. When unable to communicate on HF, the pilot may conduct normal and routine communications with ATC via New York Radio or San Francisco Radio on SATVOICE. Direct SATVOICE contact with ATC should be limited to distress and urgency situations or when other means are not available and communication is essential.

5. CPDLC Uplink Message Latency Monitor Function

5.1 Oakland (KZAK), Anchorage (PAZN) and New York (KZWY) request pilots activate the CPDLC uplink message latency monitor function to help prevent pilots from acting on a CPDLC uplink message that has been delayed in the network. When flights enter oceanic data link airspace, or initiate AFN log on within their oceanic data link airspace, equipped flights will receive a message advising crews to set the latency value. “SET MAX UPLINK DELAY VALUE TO 300 SEC”

5.2 When pilots receive the CPDLC uplink message “SET MAX UPLINK DELAY VALUE 300 SEC”, they must acknowledge (”ROGER”) the uplink as prompted by the avionics, regardless of whether the aircraft supports the latency monitor.

NOTE−
1. *It is important for pilots to respond to the “SET MAX UPLINK DELAY VALUE TO 300 SEC” uplink message to avoid having open, unanswered CPDLC messages in the system. This also applies to aircraft that have deficient message latency monitor functionality or no such functionality at all.*

2. *Oakland and Anchorage Oceanic now confirm CPDLC connection by the exchange of the CPDLC messages, "SET MAX UPLINK DELAY VALUE TO 300 SEC", and "ROGER". Previously, a CPDLC position report served this purpose.*

5.3 If the aircraft is equipped with a correctly functioning message latency monitor, enter the specified uplink delay into the avionics in accordance with the aircraft procedures. Some avionics will automatically set the delay value in accordance with the uplink message and do not allow for a manual input.

NOTE−
If an aircraft initiates another AFN log on in mid−flight, ATC may send the message "SET MAX UPLINK DELAY VALUE TO 300 SEC" again, once the log on is completed.

5.4 When pilots receive a latency monitor indication that a CPDLC uplink message has been delayed, the pilots shall:

5.4.1 Revert to voice communications to notify the ATS unit of the delayed CPDLC uplink message received, and to request clarification of the intent of the message.

5.4.2 Respond appropriately to close the message as per the instructions of the controller.

5.4.3 Not act on the delayed uplink message until clarification has been received from the controller.

6. CPDLC Messages In Use in the Oakland, Anchorage, and New York Oceanic Airspace

6.1 The CPDLC messages that are in use and authorized in the oceanic airspace of Oakland, Anchorage, and New York ARTCCs are shown in TBL ENR 7.2−1 through TBL ENR 7.2−26.

TBL ENR 7.2–1
Response Attribute of CPDLC Message Element

Response Attribute	Description
For Uplink Message	
W/U	Response required. Valid responses. WILCO, UNABLE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGEMENT (only if required), ERROR *Note – WILCO, UNABLE, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY and ERROR will close the uplink message.* *FANS 1/A.– WILCO, UNABLE, STANDBY, ERROR, NOT CURRENT DATA AUTHORITY.*
A/N	Response required. Valid responses. AFFIRM, NEGATIVE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGEMENT (only if required), ERROR *Note – AFFIRM, NEGATIVE, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY and ERROR will close the uplink message.* *FANS 1/A.– AFFIRM, NEGATIVE, STANDBY, ERROR, NOT CURRENT DATA AUTHORITY.*
R	Response required. Valid responses. ROGER, UNABLE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGEMENT (only if required), ERROR *Note – ROGER, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY and ERROR will close the uplink message.* *FANS 1/A.– ROGER, STANDBY, ERROR, NOT CURRENT DATA AUTHORITY. FANS 1/A aircraft do not have the capability to send UNABLE in response to an uplink message containing message elements with an "R" response attribute. For these aircraft, the flight crew may use alternative means to UNABLE the message. These alternative means will need to be taken into consideration to ensure proper technical and operational closure of the communication transaction.*
Y	Response required. Valid responses: Any CPDLC downlink message, LOGICAL ACKNOWLEDGEMENT (only if required).
N	No response required unless logical acknowledgement is required. Valid Responses (only if LOGICAL ACKNOWLEDGEMENT is required). LOGICAL ACKNOWLEDGEMENT, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, ERROR *FANS 1/A.– "N" is defined as "no response is required," but not used. Under some circumstances, an ERROR message will also close an uplink message.*

NE	[Not defined in Doc 4444] *FANS 1/A.− The WILCO, UNABLE, AFFIRM, NEGATIVE, ROGER, and STANDBY responses are not enabled (NE) for flight crew selection. An uplink message with a response attribute NE is considered to be closed even though a response may be required operationally. Under some circumstances, a downlink error message may be linked to an uplink message with a NE attribute.*
For Downlink Message	
Y	Response required. Yes Valid responses. Any CPDLC uplink message, LOGICAL ACKNOWLEDGEMENT (only if required).
N	Response required. No, unless logical acknowledgement required. Valid responses (only if LOGICAL ACKNOWLEDGEMENT is required). LOGICAL ACKNOWLEDGEMENT, SERVICE UNAVAILABLE, FLIGHT PLAN NOT HELD, ERROR *FANS 1/A.− Aircraft do not have the capability to receive technical responses to downlink message elements with an "N" response attribute (other than LACK or ERROR for ATN B1 aircraft). In some cases, the response attribute is different between FANS 1/A aircraft and Doc 4444. As an example, most emergency messages have an "N" response attribute for FANS 1/A whereas Doc 4444 defines a "Y" response attribute for them. As a consequence, for FANS 1/A aircraft, ATC will need to use alternative means to acknowledge to the flight crew that an emergency message has been received.*

TBL ENR 7.2−2
Route Uplink Message Elements (RTEU)

CPDLC Message Sets			**Operational Definition in PANS−ATM (Doc 4444)**		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
UM74 PROCEED DIRECT TO (*position*)	UM74 PROCEED DIRECT TO (*position*)	W/U	RTEU−2	Instruction to proceed directly to the specified position.	PROCEED DIRECT TO (*position*)
UM75 WHEN ABLE PROCEED DIRECT TO (*position*) *Note − This message element is equivalent to SUPU−5 plus RTEU−2 in Doc 4444.*	N/A	W/U	RTEU−2	Instruction to proceed directly to the specified position.	PROCEED DIRECT TO (*position*)
UM76 AT (*time*) PROCEED DIRECT TO (*position*)	N/A	W/U	RTEU−3	Instruction to proceed, at the specified time, directly to the specified position.	AT TIME *(time)* PROCEED DIRECT TO *(position)*

UM77 AT (*position*) PROCEED DIRECT TO (position)	N/A	W/U	RTEU−4	Instruction to proceed, at the specified position, directly to the next specified position.	AT *(position)* PROCEED DIRECT TO *(position)*
UM78 AT (*altitude*) PROCEED DIRECT TO (*position*)	N/A	W/U	RTEU−5	Instruction to proceed upon reaching the specified level, directly to the specified position.	AT *(level single)* PROCEED DIRECT TO *(position)*
UM79 CLEARED TO (*position*) via (*route clearance*)	UM79 CLEARED TO (*position*) via (*route clearance*)	W/U	RTEU−6	Instruction to proceed to the specified position via the specified route.	CLEARED TO *(position)* VIA *(departure data[O]) (en−route data)*
UM 80 CLEARED (*route clearance*)	UM 80 CLEARED (*route clearance*)	W/U	RTEU−7	Instruction to proceed via the specified route.	CLEARED *(departure data[O]) (en−route data) (arrival approach data)*
UM83 AT *(position)* CLEARED *(route clearance)*	N/A	W/U	RTEU−9	Instruction to proceed from the specified position via the specified route.	AT *(position)* CLEARED *(en−route data) (arrival approach data)*
UM85 EXPECT (route clearance)	N/A	R	N/A	Notification that a clearance to fly on the specified route may be issued.	N/A
UM86 AT (*position*) EXPECT (*route clearance*)	N/A	R	N/A	Notification that a clearance to fly on the specified route from the specified position may be issued.	N/A
UM87 EXPECT DIRECT TO (*position*)	N/A	R	N/A	Notification that a clearance to fly directly to the specified position may be issued.	N/A
UM88 AT (*position*) EXPECT DIRECT TO (*position*)	N/A	R	N/A	Notification that a clearance to fly directly from the first specified position to the next specified position may be issued.	N/A
UM89 AT (*time*) EXPECT DIRECT TO (*position*)	N/A	R	N/A	Notification that a clearance to fly directly to the specified position commencing at the specified time may be issued.	N/A

UM90 AT (*altitude*) EXPECT DIRECT TO (*position*)	N/A	R	N/A	Notification that a clearance to fly directly to the specified position commencing when the specified level is reached may be issued.	N/A
UM93 EXPECT FURTHER CLEARANCE AT (*time*)	N/A	R	RTEU–13	Notification that an onwards clearance may be issued at the specified time.	EXPECT FURTHER CLEARANCE AT TIME *(time)*
UM99 EXPECT *(procedure name)* *Note – Used when a published procedure is designated.*	N/A	R	RTEU–14	Notification that a clearance may be issued for the aircraft to fly the specified procedure or clearance name.	EXPECT *(named instruction)*
UM137 CONFIRM ASSIGNED ROUTE *Note – NE response attribute.*	N/A	Y	RTEU–15	Request to confirm the assigned route.	CONFIRM ASSIGNED ROUTE
UM147 REQUEST POSITION REPORT	N/A	Y	RTEU–16	Request to make a position report.	REQUEST POSITION REPORT

TBL ENR 7.2–3
Route Downlink Message Elements (RTED)

CPDLC Message Sets			**Operational Definition in PANS–ATM (Doc 4444)**		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
DM22 REQUEST DIRECT TO *(position)*	DM22 REQUEST DIRECT TO *(position)*	Y	RTED–1	Request for a direct clearance to the specified position.	REQUEST DIRECT TO *(position)*
DM23 REQUEST *(procedure name)*	N/A	Y	RTED–2	Request for the specified route.	REQUEST *(named instruction)*
DM24 REQUEST *(route clearance)*	N/A	Y	RTED–3	Request for the specified procedure or clearance name.	REQUEST CLEARANCE *(departure data[O]) (en–route data)(arrival approach data[O])*
DM25 REQUEST CLEARANCE	N/A	Y	RTED–4	Request for the specified clearance.	REQUEST *(clearance type)* CLEARANCE

DM26 REQUEST WEATHER DEVIATION TO *(position)* VIA *(route clearance)*	N/A	Y	N/A	Request for a weather deviation to the specified position via the specified route.	N/A
DM40 ASSIGNED ROUTE (route clearance)	N/A	Y	RTED–9	Confirmation that the assigned route is the specified route.	ASSIGNED ROUTE *(departure data[O]) (en–route data) (arrival approach data[O])*
DM40 ASSIGNED ROUTE (route clearance)	N/A	**N**	RTED–9	Confirmation that the assigned route is the specified route.	ASSIGNED ROUTE *(departure data[O]) (en–route data) (arrival approach data[O])*
DM48 POSITION REPORT *(position report)*	N/A	N	RTED–5	Position report.	POSITION REPORT *(position report)*
DM51 WHEN CAN WE EXPECT BACK ON ROUTE	N/A	Y	RTED–8	Request for the specified heading.	WHEN CAN WE EXPECT BACK ON ROUTE
DM70 REQUEST HEADING *(degrees)*	N/A	Y	RTED–6	Request for the specified heading.	REQUEST HEADING *(degrees)*
DM71 REQUEST GROUND TRACK *(degrees)*	N/A	Y	RTED–7	Request for the specified ground track.	REQUEST GROUND TRACK *(degrees)*

TBL ENR 7.2–4

Lateral Uplink Message Elements (LATU)

CPDLC Message Sets			**Operational Definition in PANS–ATM (Doc 4444)**		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
UM64 OFFSET *(distance offset) (direction)* OF ROUTE	UM64 OFFSET *(specified distance) (direction)* OF ROUTE	W/U	LATU–1	Instruction to fly a parallel track to the cleared route at a displacement of the specified distance in the specified direction.	OFFSET *(specified distance) (direction)* OF ROUTE

UM65 AT *(position)* OFFSET *(distance offset) (direction)* OF ROUTE	N/A	W/U	LATU–2	Instruction to fly a parallel track to the cleared route at a displacement of the specified distance in the specified direction and commencing at the specified position.	AT *(position)* OFFSET *(specified distance) (direction)* OF ROUTE
UM66 AT *(time)* OFFSET *(distance offset) (direction)* OF ROUTE	N/A	W/U	LATU–3	Instruction to fly a parallel track to the cleared route at a displacement of the specified distance in the specified direction and commencing at the specified time.	AT TIME *(time)* OFFSET *(specified distance) (direction)* OF ROUTE
UM67 PROCEED BACK ON ROUTE	N/A	W/U	LATU–4	Instruction to rejoin the cleared route.	REJOIN ROUTE
UM68 REJOIN ROUTE BY *(position)*	N/A	W/U	LATU–5	Instruction to rejoin the cleared route before passing the specified position.	REJOIN ROUTE BEFORE PASSING *(position)*
UM69 REJOIN ROUTE BY *(time)*	N/A	W/U	LATU–6	Instruction to rejoin the cleared route before the specified time.	REJOIN ROUTE BEFORE TIME *(time)*
UM70 EXPECT BACK ON ROUTE BY *(position)*	N/A	R	LATU–7	Notification that a clearance may be issued to enable the aircraft to rejoin the cleared route before passing the specified position.	EXPECT BACK ON ROUTE BEFORE PASSING *(position)*
UM71 EXPECT BACK ON ROUTE BY *(time)*	N/A	R	LATU–8	Notification that a clearance may be issued to enable the aircraft to rejoin the cleared route before the specified time.	EXPECT BACK ON ROUTE BEFORE TIME *(time)*

UM72 RESUME OWN NAVIGATION	UM72 RESUME OWN NAVIGATION	W/U	LATU–9	Instruction to resume own navigation following a period of tracking or heading clearances. May be used in conjunction with an instruction on how or where to rejoin the cleared route.	RESUME OWN NAVIGATION
UM82 CLEARED TO DEVIATE UP TO *(distance offset) (direction)* OF ROUTE	UM82 CLEARED TO DEVIATE UP TO *(specified distance) (direction)* OF ROUTE	W/U	LATU–10	Instruction allowing deviation up to the specified distance(s) from the cleared route in the specified direction*(s)*.	CLEARED TO DEVIATE UP TO *(lateral deviation)* OF ROUTE
UM98 IMMEDIATELY TURN *(direction)* HEADING *(degrees)* *Note – This message element is equivalent to EMGU–2 plus LATU–11 in Doc 4444.*	N/A	W/U	LATU–11	Instruction to turn left or right as specified on to the specified heading.	TURN *(direction)* HEADING *(degrees)*
UM127 REPORT BACK ON ROUTE *Note – R response attribute.*	N/A	W/U	LATU–18	Instruction to report when the aircraft is back on the cleared route.	REPORT BACK ON ROUTE
UM130 REPORT PASSING *(position)* *Note– R response attribute.*	N/A	W/U	LATU–19	Instruction to report upon passing the specified position.	REPORT PASSING *(position)*
UM132 CONFIRM POSITION	N/A	NE	N/A	Instruction to report the present position.	N/A
UM138 CONFIRM TIME OVER REPORTED WAYPOINT	N/A	NE	N/A	Instruction to confirm the previously reported time over the last reported waypoint.	N/A

UM139 CONFIRM REPORTED WAYPOINT	N/A	NE	N/A	Instruction to confirm the identity of the previously reported waypoint.	N/A
UM140 CONFIRM NEXT WAYPOINT	N/A	NE	N/A	Instruction to confirm the identity of the next waypoint.	N/A
UM141 CONFIRM NEXT WAYPOINT ETA	N/A	NE	N/A	Instruction to confirm the previously reported estimated time at the next waypoint.	N/A
UM142 CONFIRM ENSUING WAYPOINT	N/A	NE	N/A	Instruction to confirm the identity of the next plus one waypoint.	N/A
UM145 CONFIRM HEADING	N/A	NE	N/A	Instruction to report the present heading.	N/A
UM146 REPORT GROUND TRACK	N/A	NE	N/A	Instruction to report the present ground track.	N/A
UM152 WHEN CAN YOU ACCEPT *(specified distance) (direction)* OFFSET	N/A	NE	N/A	Instruction to report the earliest time when the specified offset track can be accepted.	N/A

TBL ENR 7.2–5

Lateral Downlink Message Elements (LATD)

CPDLC Message Sets			**Operational Definition in PANS–ATM (Doc 4444)**		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
DM15 REQUEST OFFSET *(specified distance) (direction)* OF ROUTE	N/A	Y	LATD–1	Request for a parallel track from the cleared route at a displacement of the specified distance in the specified direction.	REQUEST OFFSET *(specified distance) (direction)* OF ROUTE

DM16 AT *(position)* REQUEST OFFSET *(specified distance) (direction)* OF ROUTE	N/A	Y	N/A	Request that a parallel track, offset from the cleared track by the specified distance in the specified direction, be approved from the specified position.	N/A
DM17 AT *(time)* REQUEST OFFSET *(specified distance) (direction)* OF ROUTE	N/A	Y	N/A	Request that a parallel track, offset from the cleared track by the specified distance in the specified direction, be approved from the specified time.	N/A
DM27 REQUEST WEATHER DEVIATION UP TO *(specified distance) (direction)* OF ROUTE	DM27 REQUEST WEATHER DEVIATION UP TO *(specified distance) (direction)* OF ROUTE	Y	LATD–2	Request for a weather deviation up to the specified distance(s) off track in the specified direction(s).	REQUEST WEATHER DEVIATION UP TO *(lateral deviation)* OF ROUTE
DM31 PASSING *(position)*	N/A	N	LATD–8	Report indicating passing the specified position.	PASSING *(position)*
DM33 PRESENT POSITION *(position)*	N/A	N	N/A	Notification of the present position.	N/A
DM35 PRESENT HEADING *(degrees)*	N/A	N	N/A	Notification of the present heading in degrees.	N/A
DM36 PRESENT GROUND TRACK *(degrees)*	N/A	N	N/A	Notification of the present ground track in degrees.	N/A
DM41 BACK ON ROUTE	N/A	N	LATD–4	Report indicating that the cleared route has been rejoined.	BACK ON ROUTE
DM42 NEXT WAYPOINT *(position)*	N/A	N	N/A	The next waypoint is the specified position.	N/A
DM43 NEXT WAYPOINT ETA *(time)*	N/A	N	N/A	The ETA at the next waypoint is as specified.	N/A

DM44 ENSUING WAYPOINT *(position)*	N/A	N	N/A	The next plus one waypoint is the specified position.	N/A
DM45 REPORTED WAYPOINT *(position)*	N/A	N	N/A	Clarification of previously reported waypoint passage.	N/A
DM46 REPORTED WAYPOINT *(time)*	N/A	N	N/A	Clarification of time over previously reported waypoint.	N/A
DM59 DIVERTING TO *(position)* VIA *(route clearance)* *Note 1 – H alert attribute.* *Note 2 – N response attribute.*	N/A	Y	LATD−5	Report indicating diverting to the specified position via the specified route, which may be sent without any previous coordination done with ATC.	DIVERTING TO *(position)* VIA *(en−route data) (arrival approach data[O])*
DM60 OFFSETTING *(distance offset) (direction)* OF ROUTE *Note 1 – H alert attribute.* *Note 2 – N response attribute.*	N/A	Y	LATD−6	Report indicating that the aircraft is offsetting to a parallel track at the specified distance in the specified direction off from the cleared route.	OFFSETTING *(specified distance) (direction)* OF ROUTE
DM80 DEVIATING *(deviation Offset) (direction)* OF ROUTE *Note 1 – H alert attribute.* *Note 2 – N response attribute*	N/A	Y	LATD−7	Report indicating deviating specified distance or degrees in the specified direction from the cleared route.	DEVIATING *(specified Deviation) (direction)* OF ROUTE
DM67 WE CAN ACCEPT (*direction*) (*distance offset*) AT (*time*)	N/A	N	N/A	We can accept a parallel track offset the specified distance in the specified direction at the specified time.	N/A

DM67 WE CANNOT ACCEPT (*direction*) (*distance offset*)	N/A	N	N/A	We cannot accept a parallel track offset the specified distance in the specified direction.	N/A
DM67 WE CANNOT ACCEPT (*altitude*)	N/A	N	N/A	We cannot accept the specified altitude.	N/A

TBL ENR 7.2–6

Level Uplink Message Elements (LVLU)

CPDLC Message Sets			Operational Definition in PANS–ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
UM6 EXPECT *(altitude)*	N/A	R	N/A	Notification that a level change instruction should be expected.	N/A
UM7 EXPECT CLIMB AT *(time)*	N/A	R	LVLU–1	Notification that an instruction may be expected for the aircraft to commence climb at the specified time.	EXPECT HIGHER AT TIME *(time)*
UM8 EXPECT CLIMB AT *(position)*	N/A	R	LVLU–2	Notification that an instruction may be expected for the aircraft to commence climb at the specified position.	EXPECT HIGHER AT *(position)*
UM9 EXPECT DESCENT AT *(time)*	N/A	R	LVLU–3	Notification that an instruction may be expected for the aircraft to commence descent at the specified time.	EXPECT LOWER AT TIME *(time)*

UM10 EXPECT DESCENT AT *(position)*	N/A	R	LVLU−4	Notification that an instruction may be expected for the aircraft to commence descent at the specified position.	EXPECT LOWER AT *(position)*
UM11 EXPECT CRUISE CLIMB AT *(time)*	N/A	R	N/A	Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified time. *Due to different interpretations between the various ATS units this, element should be avoided*.	N/A
UM12 EXPECT CRUISE CLIMB AT *(position)*	N/A	R	N/A	Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified position. *Due to different interpretations between the various ATS units, this element should be avoided*.	N/A
UM13 AT *(time)* EXPECT CLIMB TO *(altitude*)	N/A	R	N/A	Notification that an instruction should be expected for the aircraft to commence climb at the specified time to the specified level.	N/A

UM14 AT *(position)* EXPECT CLIMB TO *(altitude*)	N/A	R	N/A	Notification that an instruction should be expected for the aircraft to commence climb at the specified position to the specified level.	N/A
UM15 AT *(time)* EXPECT DESCENT TO *(altitude*)	N/A	R	N/A	Notification that an instruction should be expected for the aircraft to commence descent at the specified time to the specified level.	N/A
UM16 AT *(position)* EXPECT DESCENT TO *(altitude*)	N/A	R	N/A	Notification that an instruction should be expected for the aircraft to commence descent at the specified position to the specified level.	N/A
UM17 AT *(time)* EXPECT CRUISE CLIMB TO *(altitude*)	N/A	R	N/A	Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified time to the specified level. *Due to different interpretations between the various ATS units, this element should be avoided.*	N/A

UM18 AT *(position)* EXPECT CRUISE CLIMB TO *(altitude)*	N/A	R	N/A	Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified position to the specified level. *Due to different interpretations between the various ATS units, this element should be avoided.*	N/A
UM19 MAINTAIN *(altitude)* *Note – Used for a single level.*	UM19 MAINTAIN *(level)*	W/U	LVLU–5	Instruction to maintain the specified level or vertical range.	MAINTAIN *(level)*
UM20 CLIMB TO AND MAINTAIN *(altitude)* *Note – Used for a single level.*	UM20 CLIMB TO *(level)*	W/U	LVLU–6	Instruction that a climb to the specified level or vertical range is to commence and once reached is to be maintained.	CLIMB TO *(level)*
UM21 AT *(time)* CLIMB TO AND MAINTAIN *(altitude)* *Note – A vertical range can not be provided.*	N/A	W/U	LVLU–7	Instruction that at the specified time a climb to the specified level or vertical range is to commence and once reached is to be maintained. *Note – This message element would be preceded with LVLU–5 MAINTAIN (level) to prevent the premature execution of the instruction.*	AT TIME *(time)* CLIMB TO *(level)*

UM22 AT *(position)* CLIMB TO AND MAINTAIN *(altitude)* *Note – A vertical range can not be provided.*	N/A	W/U	LVLU–8	Instruction that at the specified position a climb to the specified level or vertical range is to commence and once reached is to be maintained. *Note – This message element would be preceded with LVLU–5 MAINTAIN (level) to prevent the premature execution of the instruction.*	AT *(position)* CLIMB TO *(level)*
UM23 DESCEND TO AND MAINTAIN *(altitude)* *Note – Used for a single level.*	N/A	W/U	LVLU–9	Instruction that a descent to the specified level or vertical range is to commence and once reached is to be maintained.	DESCEND TO *(level)*
UM24 AT *(time)* DESCEND TO AND MAINTAIN *(altitude)* *Note – A vertical range can not be provided.*	N/A	W/U	LVLU–10	Instruction that at the specified time a descent to the specified level or vertical range is to commence and once reached is to be maintained.	AT TIME *(time)* DESCEND TO *(level)*
UM25 AT *(position)* DESCEND TO AND MAINTAIN *(altitude)* *Note –A vertical range cannot be provided.*	N/A	W/U	LVLU–11	Instruction that at the specified position a descent to the specified level or vertical range is to commence and once reached is to be maintained.	AT *(position)* DESCEND TO *(level)*

UM26 CLIMB TO REACH *(altitude)* BY *(time)*	UM26 CLIMB TO REACH *(level)* BY *(time)*	W/U	LVLU−12	Instruction that a climb is to be completed such that the specified level is reached before the specified time.	CLIMB TO REACH *(level single)* BEFORE TIME *(time)*
UM27 CLIMB TO REACH *(altitude)* BY *(position)*	UM27 CLIMB TO REACH *(level)* BY *(position)*	W/U	LVLU−13	Instruction that a climb is to be completed such that the specified level is reached before passing the specified position.	CLIMB TO REACH *(level single)* BEFORE PASSING *(position)*
UM28 DESCEND TO REACH *(altitude)* BY *(time)*	UM28 DESCEND TO REACH *(level)* BY *(time)*	W/U	LVLU−14	Instruction that a descent is to be completed such that the specified level is reached before the specified time.	DESCEND TO REACH *(level single)* BEFORE TIME *(time)*
UM29 DESCEND TO REACH *(altitude)* BY *(position)*	UM29 DESCEND TO REACH *(level)* BY *(position)*	W/U	LVLU−15	Instruction that a descent is to be completed such that the specified level is reached before passing the specified position.	DESCEND TO REACH *(level single)* BEFORE PASSING *(position)*
UM30 MAINTAIN BLOCK *(altitude)* TO *(altitude)* *Note − Used for a vertical range.*	UM19 MAINTAIN *(level)*	W/U	LVLU−5	Instruction to maintain the specified level or vertical range.	MAINTAIN *(level)*
UM31 CLIMB TO AND MAINTAIN BLOCK *(altitude)* TO *(altitude)* *Note − Used for a vertical range.*	UM20 CLIMB TO *(level)*	W/U	LVLU−6	Instruction that a climb to the specified level or vertical range is to commence and once reached is to be maintained.	CLIMB TO *(level)*

UM32 DESCEND TO AND MAINTAIN BLOCK *(altitude)* TO *(altitude)* *Note – Used for a vertical range.*	UM23 DESCEND TO *(level)*	W/U	LVLU–9	Instruction that a descent to the specified level or vertical range is to commence and once reached is to be maintained.	DESCEND TO *(level)*
UM33 CRUISE *(altitude)*	N/A	W/U	N/A	Instruction that authorizes a pilot to conduct flight at any altitude from the minimum altitude up to and including the altitude specified in the clearance. Further, it is approval for the pilot to proceed to and make an approach at the destination airport. *Due to different interpretations between the various ATS units, this element should be avoided.*	N/A
UM34 CRUISE CLIMB TO *(altitude)*	N/A	W/U	N/A	A cruise climb is to commence and continue until the specified level is reached. *Due to different interpretations between the various ATS units, this element should be avoided.*	N/A

UM35 CRUISE CLIMB ABOVE *(altitude)*	N/A	W/U	N/A	A cruise climb can commence once above the specified level. *Due to different interpretations between the various ATS units, this element should be avoided.*	N/A
UM36 EXPEDITE CLIMB TO (*altitude*) *Note – This message element is equivalent to SUPU−3 plus LVLU−6 in Doc 4444.*	N/A	W/U	LVLU−6	Instruction that a climb to the specified level or vertical range is to commence and once reached is to be maintained.	CLIMB TO *(level)*
UM37 EXPEDITE DESCENT TO *(altitude)* *Note – This message element is equivalent to SUPU−3 plus LVLU−9 in Doc 4444.*	N/A	W/U	LVLU−9	Instruction that a descent to the specified level or vertical range is to commence and once reached is to be maintained.	DESCEND TO *(level)*
UM38 IMMEDIATELY CLIMB TO (*altitude*) *Used in combination with EMGU−2 plus LVLU−6 in Doc 4444 as an urgent instruction to immediately climb to the specified level.*	N/A	W/U	LVLU−6	Instruction that a climb to the specified level or vertical range is to commence and once reached is to be maintained.	CLIMB TO *(level)*

UM39 IMMEDIATELY DESCEND TO *(altitude)* *Used in combination with EMGU–2 plus LVLU–9 in Doc 4444 as an urgent instruction to immediately descend to the specified level.*	N/A	W/U	LVLU–9	Instruction that a descent to the specified level or vertical range is to commence and once reached is to be maintained.	DESCEND TO *(level)*
UM40 IMMEDIATELY STOP CLIMB AT *(altitude)*	N/A	W/U	N/A	Urgent instruction to immediately stop a climb once the specified level is reached.	N/A
UM41 IMMEDIATELY STOP DESCENT AT *(altitude)*	N/A	W/U	N/A	Urgent instruction to immediately stop a descent once the specified level is reached.	N/A
UM128 REPORT LEAVING *(altitude)* *Note – R response attribute.*	N/A	W/U	LVLU–23	Instruction to report upon leaving the specified level.	REPORT LEAVING *(level single)*
UM129 REPORT LEVEL *(altitude)* *Note – R response attribute.*	N/A	W/U	LVLU–24	Instruction to report upon maintaining the specified level.	REPORT MAINTAINING *(level single)*
UM133 CONFIRM ALTITUDE	N/A	NE	N/A	Instruction to report the present level.	N/A
UM135 CONFIRM ASSIGNED ALTITUDE *Note – NE response attribute.*	N/A	Y	LVLU–27	Request to confirm the assigned level.	CONFIRM ASSIGNED LEVEL

UM148 WHEN CAN YOU ACCEPT *(altitude)* *Note – NE response attribute.*	UM148 WHEN CAN YOU ACCEPT *(level)*	Y	LVLU–30	Request for the earliest time or position when the specified level can be accepted.	WHEN CAN YOU ACCEPT *(level single)*
UM149 CAN YOU ACCEPT *(altitude)* AT *(position)*	N/A	A/N	LVLU–31	Request to indicate whether or not the specified level can be accepted at the specified position.	CAN YOU ACCEPT *(level single)* AT *(position)*
UM150 CAN YOU ACCEPT (*altitude*) AT (*time*)	N/A	A/N	LVLU–32	Request to indicate whether or not the specified level can be accepted at the specified time.	CAN YOU ACCEPT *(level single)* AT TIME *(time)*
UM171 CLIMB AT *(vertical rate)* MINIMUM	UM171 CLIMB AT *(vertical rate)* MINIMUM	W/U	LVLU–18	Instruction to climb at the specified rate or greater.	CLIMB AT *(vertical rate)* OR GREATER
UM172 CLIMB AT *(vertical rate)* MAXIMUM	UM172 CLIMB AT *(vertical rate)* MAXIMUM	W/U	LVLU–19	Instruction to climb at the specified rate or less.	CLIMB AT *(vertical rate)* OR LESS
UM173 DESCEND AT *(vertical rate)* MINIMUM	UM173 DESCEND AT *(vertical rate)* MINIMUM	W/U	LVLU–20	Instruction to descend at the specified rate or greater.	DESCEND AT *(vertical rate)* OR GREATER
UM174 DESCEND AT *(vertical rate)* MAXIMUM	UM174 DESCEND AT *(vertical rate)* MAXIMUM	W/U	LVLU–21	Instruction to descend at the specified rate or less.	DESCEND AT *(vertical rate)* OR LESS
UM175 REPORT REACHING *(altitude)*	N/A	R	N/A	Instruction to report when the aircraft has reached the specified altitude.	N/A
UM177 AT PILOTS DISCRETION	N/A	N	N/A	Note – To be interpreted as “Report reaching an assigned altitude.”	N/A

UM180 REACHING BLOCK *(altitude)* TO *(altitude)* *Note – R response attribute.*	N/A	W/U	LVLU–26	Instruction to report upon reaching the specified vertical range.	REPORT REACHING BLOCK *(level single)* TO *(level single)*

TBL ENR 7.2–7

Level Downlink Message Elements (LVLD)

CPDLC Message Sets			**Operational Definition in PANS–ATM (Doc 4444)**		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
DM6 REQUEST *(altitude)* *Note –Used for a single level.*	DM6 REQUEST *(level)*	Y	LVLD–1	Request to fly at the specified level or vertical range.	REQUEST *(level)*
DM7 REQUEST BLOCK *(altitude)* TO *(altitude)* *Note – Used for a vertical range.*	DM6 REQUEST *(level)*	Y	LVLD–1	Request to fly at the specified level or vertical range.	REQUEST *(level)*
DM8 REQUEST CRUISE CLIMB TO *(altitude)*	N/A	Y	N/A	Request to cruise climb to the specified level. *Due to different interpretations between the various ATS units, this element should be avoided.*	N/A
DM9 REQUEST CLIMB TO *(altitude)* *Note – Use of DM7 REQUEST BLOCK (altitude) TO (altitude) to request to climb at a vertical range.*	DM9 REQUEST CLIMB TO *(level)*	Y	LVLD–2	Request for a climb to the specified level or vertical range.	REQUEST CLIMB TO *(level)*

DM10 REQUEST DESCENT TO *(altitude)* *Note – Use of DM7 REQUEST BLOCK (altitude) TO (altitude) to request to descend at a vertical range.*	DM10 REQUEST DESCENT TO *(level)*	Y	LVLD–3	Request for a descent to the specified level or vertical range.	REQUEST CLIMB TO *(level)*
DM11 AT *(position)* REQUEST CLIMB TO *(altitude)* *Note – A vertical range cannot be requested.*	N/A	Y	LVLD–4	Request for a climb/descent to the specified level or vertical range to commence at the specified position.	AT *(position)* REQUEST *(level)*
DM12 AT *(position)* REQUEST DESCENT TO *(altitude)* *Note – A vertical range cannot be requested.*	N/A	Y	LVLD–4	Request for a climb/descent to the specified level or vertical range to commence at the specified position.	AT *(position)* REQUEST *(level)*
DM13 AT TIME *(time)* REQUEST CLIMB TO *(altitude)* *Note – A vertical range cannot be requested.*	N/A	Y	LVLD–5	Request for a climb/descent to the specified level or vertical range to commence at the specified time.	AT TIME *(time)* REQUEST *(level)*
DM14 AT TIME *(time)* REQUEST DESCENT TO *(altitude)* *Note – A vertical range cannot be requested.*	N/A	Y	LVLD–5	Request for a climb/descent to the specified level or vertical range to commence at the specified time.	AT TIME *(time)* REQUEST *(level)*
DM28 LEAVING *(altitude)*	N/A	N	LVLD–8	Report indicating leaving the specified level	LEAVING *(level single)*
DM29 CLIMBING TO *(altitude)*	N/A	N	LVLD–13	Report indicating climbing to the specified level.	CLIMBING TO *(level single)*

DM30 DESCENDING TO *(altitude)* *Note – N alert attribute.*	N/A	N	LVLD–14	Report indicating descending to the specified level.	DESCENDING TO *(level single)*
DM32 PRESENT ALTITUDE *(altitude)*	DM32 PRESENT LEVEL *(altitude)*	N	LVLD–19	Notification of the present level.	Present level (*single level*)
DM37 LEVEL *(altitude)*	N/A	N	LVLD–9	Report indicating that the specified level is being maintained.	MAINTAINING *(level single)*
DM38 ASSIGNED ALTITUDE *(altitude)* *Note – Used for a single level*	DM38 ASSIGNED LEVEL *(level)*	N	LVLD–11	Confirmation that the assigned level or vertical range is the specified level or vertical range.	ASSIGNED LEVEL *(level)*
DM52 WHEN CAN WE EXPECT LOWER ALTITUDE	N/A	Y	LVLD–6	Request for the earliest time or position that a descent can be expected.	WHEN CAN WE EXPECT LOWER LEVEL
DM53 WHEN CAN WE EXPECT HIGHER ALTITUDE	N/A	Y	LVLD–7	Request for the earliest time or position that a climb can be expected.	WHEN CAN WE EXPECT HIGHER LEVEL
DM54 WHEN CAN WE EXPECT CRUISE CLIMB TO *(altitude)*	N/A	Y	N/A	Request for the earliest time at which a clearance to cruise climb to the specified level can be expected.	N/A
DM61 DESCENDING TO *(altitude)* *Note – Urgent alert attribute.*	N/A	N	LVLD–14	Report indicating descending to the specified level.	DESCENDING TO *(level single)*
DM67 WE CAN ACCEPT *(altitude)* AT TIME *(time)*	DM81 WE CAN ACCEPT *(level)* AT *(time)* *Note – A vertical range may be provided.*	N	LVLD–15	Indication that the specified level can be accepted at the specified time.	WE CAN ACCEPT *(level single)* AT TIME *(time)*

DM67 WE CANNOT ACCEPT *(altitude)*	DM82 WE CANNOT ACCEPT *(level)* *Note – A vertical range may be provided.*	N	LVLD–17	Indication that the specified level cannot be accepted.	WE CANNOT ACCEPT *(level single)*
DM67 WHEN CAN WE EXPECT CLIMB TO (*altitude*)	N/A	N	N/A	Request for the earliest time at which a clearance to climb to the specified level can be expected.	N/A
DM 67 WHEN CAN WE EXPECT DESCENT TO (*altitude*)	N/A	N	N/A	Request for the earliest time at which a clearance to descend to the specified level can be expected.	N/A
DM72 REACHING *(altitude)*	N/A	N	N/A	Notification that the aircraft has reached the specified level.	N/A
DM75 AT PILOTS DISCRETION	N/A	N	N/A	Used in conjunction with another message to indicate that the pilot wishes to execute the request when the pilot is prepared to do so.	N/A
DM76 REACHING BLOCK *(altitude)* TO *(altitude)*	N/A	N	LVLD–10	Report indicating reaching the specified vertical range.	REACHING BLOCK *(level single)* TO *(level single)*
DM77 ASSIGNED BLOCK *(altitude)* TO *(altitude)* *Note – Used for a vertical range.*	DM38 ASSIGNED LEVEL *(level)*	N	LVLD–11	Confirmation that the assigned level or vertical range is the specified level or vertical range.	ASSIGNED LEVEL *(level)*

TBL ENR 7.2–8

Crossing Constraints Uplink Message Elements (CSTU)

CPDLC Message Sets			Operational Definition in PANS–ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
UM42 EXPECT TO CROSS (*position*) AT (*altitude*)	N/A	R	N/A	Notification that a level change instruction should be expected which will require the specified position to be crossed at the specified level.	N/A
UM43 EXPECT TO CROSS (*position*) AT OR ABOVE (*altitude*)	N/A	R	N/A	Notification that a level change instruction should be expected which will require the specified position to be crossed at or above the specified level.	N/A
UM44 EXPECT TO CROSS (*position*) AT OR BELOW (*altitude*)	N/A	R	N/A	Notification that a level change instruction should be expected which will require the specified position to be crossed at or below the specified level.	N/A
UM45 EXPECT TO CROSS *(position)* AT AND MAINTAIN *(altitude)*	N/A	R	N/A	Notification that a level change instruction should be expected which will require the specified position to be crossed at the specified level which is to be maintained subsequently.	N/A
UM46 CROSS *(position)* AT *(altitude)* *Note – Used for a single level.*	UM46 CROSS *(position)* AT *(level)*	W/U	CSTU–1	Instruction that the specified position is to be crossed at the specified level or within the specified vertical range.	CROSS *(position)* AT *(level)*

UM47 CROSS *(position)* AT OR ABOVE *(altitude)*	UM47 CROSS *(position)* AT OR ABOVE *(level)*	W/U	CSTU−2	Instruction that the specified position is to be crossed at or above the specified level.	CROSS *(position)* AT OR ABOVE *(level single)*
UM48 CROSS *(position)* AT OR BELOW *(altitude)*	UM48 CROSS *(position)* AT OR BELOW *(altitude)*	W/U	CSTU−3	Instruction that the specified position is to be crossed at or below the specified level.	CROSS *(position)* AT OR BELOW *(level single)*
UM49 CROSS (*position*) AT AND MAINTAIN (*altitude*) *Note 1. − A vertical range cannot be provided.* *Note 2. − This message element is equivalent to CSTU−1 plus LVLU−5 in Doc 4444.*	N/A	W/U	CSTU−1	Instruction that the specified position is to be crossed at the specified level or within the specified vertical range.	CROSS *(position)* AT *(level)*
UM50 CROSS *(position)* BETWEEN *(altitude)* AND *(altitude)* *Note − Used for a vertical range.*	UM46 CROSS *(position)* AT *(level)*	W/U	CSTU−1	Instruction that the specified position is to be crossed at the specified level or within the specified vertical range.	CROSS *(position)* AT *(level)*
UM51 CROSS *(position)* AT *(time)*	UM51 CROSS *(position)* AT *(time)*	W/U	CSTU−4	Instruction that the specified position is to be crossed at the specified time.	CROSS *(position)* AT TIME *(time)*
UM52 CROSS *(position)* AT OR BEFORE *(time)*	UM52 CROSS *(position)* AT OR BEFORE *(time)*	W/U	CSTU−5	Instruction that the specified position is to be crossed before the specified time.	CROSS *(position)* BEFORE TIME *(time)*
UM53 CROSS *(position)* AT OR AFTER *(time)*	UM53 CROSS *(position)* AT OR AFTER *(time)*	W/U	CSTU−6	Instruction that the specified position is to be crossed after the specified time.	CROSS *(position)* AFTER TIME *(time)*

UM54 CROSS *(position)* BETWEEN *(time)* AND *(time)*	UM54 CROSS *(position)* BETWEEN *(time)* AND *(time)*	W/U	CSTU–7	Instruction that the specified position is to be crossed between the specified times.	CROSS *(position)* BETWEEN TIME *(time)* AND TIME *(time)*
UM55 CROSS *(position)* AT *(speed)*	UM55 CROSS *(position)* AT *(speed)*	W/U	CSTU–8	Instruction that the specified position is to be crossed at the specified speed.	CROSS *(position)* AT *(speed)*
UM56 CROSS *(position)* AT OR LESS THAN *(speed)*	N/A	W/U	CSTU–9	Instruction that the specified position is to be crossed at or less than the specified speed.	CROSS *(position)* AT *(speed)* OR LESS
UM57 CROSS *(position)* AT OR GREATER THAN *(speed)*	N/A	W/U	CSTU–10	Instruction that the specified position is to be crossed at or greater than the specified speed.	CROSS *(position)* AT *(speed)* OR GREATER
UM58 CROSS *(position)* AT *(time)* AT *(altitude)* *Note – A vertical range cannot be provided.*	N/A	W/U	CSTU–11	Instruction that the specified position is to be crossed at the specified time and at the level or within the vertical range as specified.	CROSS *(position)* AT TIME *(time)* AT *(level)*
UM59 CROSS *(position)* AT OR BEFORE *(time)* AT *(altitude)* *Note – A vertical range cannot be provided.*	N/A	W/U	CSTU–12	Instruction that the specified position is to be crossed before the specified time and at the level or within the vertical range as specified.	CROSS *(position)* BEFORE TIME *(time)* AT *(level)*
UM60 CROSS *(position)* AT OR AFTER *(time)* AT *(altitude)* *Note – A vertical range cannot be provided.*	N/A	W/U	CSTU–13	Instruction that the specified position is to be crossed after the specified time and at the level or within the vertical range as specified.	CROSS *(position)* AFTER TIME *(time)* AT *(level)*

UM61 CROSS *(position)* AT AND MAINTAIN *(altitude)* AT *(speed)* *Note 1. – A vertical range cannot be provided.* *Note 2. – This message element is equivalent to CSTU–14 plus LVLU–5 in Doc 4444.*	UM61 CROSS *(position)* AT AND MAINTAIN *(level)* AT *(speed)*	W/U	CSTU–14	Instruction that the specified position is to be crossed at the level or within the vertical range, as specified, and at the specified speed.	CROSS *(position)* AT *(level)* AT *(speed)*
UM62 AT *(time)* CROSS *(position)* AT AND MAINTAIN *(altitude)*	N/A	W/U	NA	Instruction that at the specified time the specified position is to be crossed at the specified level and the level is to be maintained.	N/A
UM63 AT *(time)* CROSS *(position)* AT AND MAINTAIN *(altitude)* AT *(speed)* *Note 1. – A vertical range cannot be provided.* *Note 2. – This message element is equivalent to CSTU–15 plus LVLU–5 in Doc 4444.*	N/A	W/U	CSTU–15	Instruction that the specified position is to be crossed at the specified time at the level or within the vertical range, as specified, and at the specified speed.	CROSS *(position)* AT TIME *(time)* AT *(level)* AT *(speed)*

TBL ENR 7.2–9

Speed Uplink Message Elements (SPDU)

CPDLC Message Sets			**Operational Definition in PANS–ATM (Doc 4444)**		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
UM100 AT *(time)* EXPECT *(speed)*	N/A	R	SPDU–1	Notification that a speed instruction may be issued to take effect at the specified time.	EXPECT SPEED CHANGE AT TIME *(time)*

UM101 AT *(position)* EXPECT *(speed)*	N/A	R	SPDU– 2	Notification that a speed instruction may be issued to take effect at the specified position.	EXPECT SPEED CHANGE AT *(position)*
UM102 AT *(altitude)* EXPECT *(speed)*	N/A	R	SPDU–3	Notification that a speed instruction may be issued to take effect at the specified level.	EXPECT SPEED CHANGE AT *(level single)*
UM103 AT *(time)* EXPECT *(speed)* TO *(speed)*	N/A	R	N/A	Notification that a speed range instruction may be issued to be effective at the specified time.	N/A
UM104 AT *(position)* EXPECT *(speed)* TO *(speed)*	N/A	R	N/A	Notification that a speed range instruction may be issued to be effective at the specified position.	N/A
UM105 AT *(altitude)* EXPECT *(speed)* TO *(speed)*	N/A	R	N/A	Notification that a speed range instruction may be issued to be effective at the specified level.	N/A
UM106 MAINTAIN *(speed)*	UM106 MAINTAIN *(speed)*	W/U	SPDU–4	Instruction to maintain the specified speed.	MAINTAIN *(speed)*
UM107 MAINTAIN PRESENT SPEED	UM107 MAINTAIN PRESENT SPEED	W/U	SPDU–5	Instruction to maintain the present speed.	MAINTAIN PRESENT SPEED
UM108 MAINTAIN *(speed)* OR GREATER	UM108 MAINTAIN *(speed)* OR GREATER	W/U	SPDU–6	Instruction to maintain the specified speed or greater.	MAINTAIN *(speed)* OR GREATER
UM109 MAINTAIN *(speed)* OR LESS	UM109 MAINTAIN *(speed)* OR LESS	W/U	SPDU–7	Instruction to maintain the specified speed or less.	MAINTAIN *(speed)* OR LESS
UM110 MAINTAIN *(speed)* TO *(speed)*	N/A	W/U	SPDU–8	Instruction to maintain the specified speed range.	MAINTAIN *(speed)* TO *(speed)*

UM111 INCREASE SPEED TO *(speed)*	N/A	W/U	SPDU–9	Instruction that the present speed is to be increased to the specified speed and maintained until further advised.	INCREASE SPEED TO *(speed)*
UM112 INCREASE SPEED TO *(speed)* OR GREATER	N/A	W/U	SPDU–10	Instruction that the present speed is to be increased to the specified speed or greater, and maintained at or above the specified speed until further advised.	INCREASE SPEED TO *(speed)* OR GREATER
UM113 REDUCE SPEED TO *(speed)*	N/A	W/U	SPDU–11	Instruction that the present speed is to be reduced to the specified speed and maintained until further advised.	REDUCE SPEED TO *(speed)*
UM114 REDUCE SPEED TO *(speed)* OR LESS	N/A	W/U	SPDU–12	Instruction that the present speed is to be reduced to the specified speed or less, and maintained at or below the specified speed until further advised.	REDUCE SPEED TO *(speed)* OR LESS
UM115 DO NOT EXCEED *(speed)*	N/A	W/U	N/A	The specified speed is not to be exceeded.	N/A
UM116 RESUME NORMAL SPEED	UM116 RESUME NORMAL SPEED	W/U	SPDU–13	Instruction to resume a normal speed. The aircraft no longer needs to comply with a previously issued speed restriction.	RESUME NORMAL SPEED
UM134 CONFIRM SPEED *Note – NE response attribute.*	N/A	Y	SPDU–15	Request to report the speed defined by the speed type(s).	REPORT *(speed types)* SPEED

UM136 CONFIRM ASSIGNED SPEED *Note – NE response attribute.*	N/A	Y	SPDU–16	Request to confirm the assigned speed.	CONFIRM ASSIGNED SPEED
UM151 WHEN CAN YOU ACCEPT *(speed)* *Note – NE response attribute.*	N/A	Y	SPDU–17	Request for the earliest time or position when the specified speed can be accepted.	WHEN CAN YOU ACCEPT *(speed)*

TBL ENR 7.2−10

Speed Downlink Message Elements (SPDD)

CPDLC Message Sets			Operational Definition in PANS−ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
DM18 REQUEST *(speed)*	DM18 REQUEST *(speed)*	Y	SPDD−1	Request for the specified speed.	REQUEST *(speed)*
DM19 REQUEST *(speed)* TO *(speed)*	N/A	Y	N/A	Request to fly within the specified speed range.	N/A
DM34 PRESENT SPEED *(speed)*	N/A	N	SPDD−3	Report indicating the speed defined by the specified speed types is the specified speed.	*(speed types)* SPEED *(speed)*
DM39 ASSIGNED SPEED *(speed)*	N/A	N	SPDD−4	Confirmation that the assigned speed is the specified speed.	ASSIGNED SPEED *(speed)*
DM49 WHEN CAN WE EXPECT *(speed)*	N/A	Y	SPDD−2	Request for the earliest time or position that the specified speed can be expected.	WHEN CAN WE EXPECT *(speed)*
DM50 WHEN CAN WE EXPECT *(speed)* TO *(speed)*	N/A	Y	N/A	Request for the earliest time at which a clearance to a speed within the specified range can be expected.	N/A
DM67 WE CAN ACCEPT *(speed)* AT TIME *(time)*	N/A	N	SPDD−5	Indication that the specified speed can be accepted at the specified time.	WE CAN ACCEPT *(speed)* AT TIME *(time)*
DM67 WE CANNOT ACCEPT *(speed)*	N/A	N	SPDD−6	Indication that the specified speed cannot be accepted.	WE CANNOT ACCEPT *(speed)*

TBL ENR 7.2–11

Air Traffic Advisory Uplink Message Elements (ADVU)

CPDLC Message Sets			Operational Definition in PANS–ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
UM123 SQUAWK *(beacon code)*	UM123 SQUAWK *(code)*	W/U	ADVU–9	Instruction to select the specified SSR code.	SQUAWK *(SSR code)*
UM124 STOP SQUAWK	N/A	W/U	ADVU–10	Instruction to disable SSR transponder responses.	STOP SQUAWK
UM125 SQUAWK ALTITUDE	N/A	W/U	ADVU–12	Instruction to include level information in the SSR transponder responses.	SQUAWK MODE C
UM126 STOP ALTITUDE SQUAWK	N/A	W/U	ADVU–13	Instruction to stop including level information in the SSR transponder responses.	STOP SQUAWK MODE C
UM144 CONFIRM SQUAWK *Note – NE response attribute.*	N/A	Y	ADVU–14	Request to confirm the Selected SSR code.	CONFIRM SQUAWK CODE
UM153 ALTIMETER *(altimeter)* *Note 1. – The facility designation and the time of measurement cannot be provided.* *Note 2. – the FAA concatenates UM169 '(facility designation) ALTIMETER (altimeter setting)'*	UM213 *(facility designation)* ALTIMETER *(altimeter)* *Note –The facility designation is always provided and the time of measurement cannot be provided.*	R	ADVU–1	Advisory providing the specified altimeter setting for the specified facility.	*(facility designation)* ALTIMETER *(altimeter setting)*
UM154 RADAR SERVICES TERMINATED	N/A	R	ADVU–2	Advisory that the ATS surveillance service is terminated.	SURVEILLANCE SERVICE TERMINATED

UM155 RADAR CONTACT *(position)* *Note – The provision of the position is required.*	N/A	R	ADVU–3	Advisory that ATS surveillance service has been established. A position may be specified position.	IDENTIFIED *(position[O])*
UM156 RADAR CONTACT LOST	N/A	R	ADVU–4	Advisory that ATS surveillance contact has been lost.	IDENTIFICATION LOST
UM158 ATIS *(atis code)* *Note – The airport is not provided.*	N/A	R	ADVU–5	ATS advisory that the current ATIS *code* is as specified.	ATIS *(ATIS code)*
UM163 (ICAO *facility designation*) (tp4Table)	N/A	N/E	N/A	Notification to the pilot of an ATSU identifier.	N/A
UM168 DISREGARD	N/A	N/E	N/A	The indicated communication should be ignored. *The previously sent uplink CPDLC message shall be ignored. DISREGARD should not refer to a clearance or instruction. If DISREGARD is used, another element shall be added to clarify which message is to be disregarded.*	N/A
UM179 SQUAWK IDENT	UM179 SQUAWK IDENT	W/U	ADVU–15	Instruction that the ¿ident¿ function on the SSR transponder is to be actuated.	SQUAWK IDENT
UM182 CONFIRM ATIS CODE	N/A	N/E	N/A	Instruction to report the identification code of the last ATIS received.	N/A

TBL ENR 7.2–12

Air Traffic Advisory Downlink Message Elements (ADVD)

CPDLC Message Sets			Operational Definition in PANS–ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
DM47 SQUAWKING *(code)*	N/A	N	ADVD–1	Report indicating that the aircraft is squawking the specified SSR code.	SQUAWKING *(SSR code)*
DM79 ATIS *(ATIS code)*	N/A	N	N/A	The code of the latest ATIS received is as specified.	N/A

TBL ENR 7.2–13

Voice Communications Uplink Message Elements (COMU)

CPDLC Message Sets			Operational Definition in PANS–ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
UM117 CONTACT *(ICAO unit name) (frequency)*	UM117 CONTACT *(ICAO unit name) (frequency)*	W/U	COMU–1	Instruction to establish voice contact with the specified ATS unit on the specified frequency.	CONTACT *(unit name) (frequency)*
UM118 AT *(position)* CONTACT *(ICAO unit name) (frequency)*	N/A	W/U	COMU–2	Instruction at the specified position to establish voice contact with the specified ATS unit on the specified frequency.	AT *(position)* CONTACT *(unit name) (frequency)*
UM119 AT *(time)* CONTACT *(ICAO unit name) (frequency)*	N/A	W/U	COMU–3	Instruction at the specified time to establish voice contact with the specified ATS unit on the specified frequency.	AT TIME *(time)* CONTACT *(unit name) (frequency)*

UM120 MONITOR *(ICAO unit name) (frequency)*	UM120 MONITOR *(ICAO unit name) (frequency)*	W/U	COMU–5	Instruction to monitor the specified ATS unit on the specified frequency. The flight crew is not required to establish voice contact on the frequency.	MONITOR *(unit name) (frequency)*
UM121 AT *(position)* MONITOR *(ICAO unit name) (frequency)*	N/A	W/U	COMU–6	Instruction at the specified position to monitor the specified ATS unit on the specified frequency. The flight crew is not required to establish voice contact on the frequency.	AT *(position)* MONITOR *(unit name) (frequency)*
UM122 AT *(time)* MONITOR *(ICAO unit name) (frequency)*	N/A	W/U	COMU–7	Instruction at the specified time to monitor the specified ATS unit on the specified frequency. The flight crew is not required to establish voice contact on the frequency.	AT TIME *(time)* MONITOR *(unit name) (frequency)*
UM157 CHECK STUCK MICROPHONE *(frequency)* *Note – R response attribute.*	UM157 CHECK STUCK MICROPHONE *(frequency)*	N	COMU–8	Instruction to check the microphone due to detection of a continuous transmission on the specified frequency.	CHECK STUCK MICROPHONE *(frequency)*

TBL ENR 7.2–14

Voice Communications Downlink Message Elements (COMD)

CPDLC Message Sets			Operational Definition in PANS–ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
DM20 REQUEST VOICE CONTACT *Note – Used when a frequency is not required.*	N/A	Y	COMD–1	Request for voice contact on the specified frequency.	REQUEST VOICE CONTACT *(frequency)*
DM21 REQUEST VOICE CONTACT *(frequency)* *Note – Used when a frequency is required.*	N/A	Y	COMD–1	Request for voice contact on the specified frequency.	REQUEST VOICE CONTACT *(frequency)*

TBL ENR 7.2–15

Emergency/Urgency Uplink Message Elements (EMGU)

CPDLC Message Sets			Operational Definition in PANS–ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
UM131 REPORT REMAINING FUEL AND SOULS ON BOARD *Note – NE response attribute.*	N/A	Y	EMGU–1	Request to provide the fuel Remaining (time) and the number of persons on board.	REPORT ENDURANCE AND PERSONS ON BOARD

TBL ENR 7.2–16

Emergency/Urgency Downlink Message Elements (EMGD)

CPDLC Message Sets			Operational Definition in PANS–ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
DM55 PAN PAN PAN *Note – N response attribute.*	N/A	Y	EMGD–1	Indication of an urgent situation.	PAN PAN PAN
DM56 MAYDAY MAYDAY MAYDAY *Note – N response attribute.*	N/A	Y	EMGD–2	Indication of an emergency situation.	MAYDAY MAYDAY MAYDAY
DM57 *(remaining fuel)* OF FUEL REMAINING AND *(remaining souls)* SOULS ON BOARD *Note – N response attribute.*	N/A	Y	EMGD–3	Report indicating fuel Remaining (time) and number of persons on board.	*(remaining fuel)* ENDURANCE AND *(persons on board)* PERSONS ON BOARD
DM58 CANCEL EMERGENCY *Note – N response attribute.*	N/A	Y	EMGD–4	Indication that the emergency situation is cancelled.	CANCEL EMERGENCY

TBL ENR 7.2−17

Standard Response Uplink Message Elements (RSPU)

CPDLC Message Sets			Operational Definition in PANS−ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
UM0 UNABLE	UM0 UNABLE	N	RSPU−1	Indication that the message cannot be complied with.	UNABLE
UM1 STANDBY	UM1 STANDBY	N	RSPU−2	Indication that the message will be responded to shortly.	STANDBY
UM2 REQUEST DEFERRED	N/A	N	RSPU−3	Indication that a long−term delay in response can be expected.	REQUEST DEFERRED
UM3 ROGER	UM3 ROGER	N	RSPU−4	Indication that the message is received.	ROGER
UM4 AFFIRM	UM4 AFFIRM	N	RSPU−5	Indication that ATC is responding positively to the message.	AFFIRM
UM5 NEGATIVE	UM5 NEGATIVE	N	RSPU−6	Indication that ATC is responding negatively to the message.	NEGATIVE
UM143 CONFIRM REQUEST	N/A	N	RSPU−8	Request to confirm the referenced request since the initial request was not understood. The request should be clarified and resubmitted.	CONFIRM REQUEST

TBL ENR 7.2−18

Standard Response Downlink Message Elements (RSPD)

CPDLC Message Sets			Operational Definition in PANS−ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
DM0 WILCO	DM0 WILCO	N	RSPD−1	Indication that the instruction is understood and will be complied with.	WILCO
DM1 UNABLE	DM1 UNABLE	N	RSPD−2	Indication that the instruction cannot be complied with.	UNABLE
DM2 STANDBY	DM2 STANDBY	N	RSPD−3	Indication that the message will be responded to shortly.	STANDBY
DM3 ROGER *Note − ROGER is the only correct response to an uplink free text message.*	DM3 ROGER	N	RSPD−4	Indication that the message is received.	ROGER
DM4 AFFIRM	DM4 AFFIRM	N	RSPD−5	Indication of a positive response to a message.	AFFIRM
DM5 NEGATIVE	DM5 NEGATIVE	N	RSPD−6	Indication of a negative response to a message.	NEGATIVE

TBL ENR 7.2–19

Supplemental Uplink Message Elements (SUPU)

CPDLC Message Sets			Operational Definition in PANS–ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
UM164 WHEN READY	N/A	NE	SUPU–1	Indication that the associated instruction is to be executed when the flight crew is ready.	WHEN READY
UM165 THEN	N/A	NE	N/A	Used to link two messages, indicating the proper order of execution of clearances/ instructions.	N/A
UM166 DUE TO TRAFFIC	N/A	NE	SUPU–2	Indication that the associated message is issued due to the specified reason.	DUE TO *(specified reason uplink)*
UM167 DUE TO AIRSPACE RESTRICTION	N/A	NE	SUPU–2	Indication that the associated message is issued due to the specified reason.	DUE TO *(specified reason uplink)*
UM168 DISREGARD	N/A	R	N/A	The indicated communication should be ignored. *The previously sent uplink CPDLC message shall be ignored. DISREGARD should not refer to a clearance or instruction. If DISREGARD is used, another element shall be added to clarify which message is to be disregarded.*	N/A

UM176 MAINTAIN OWN SEPARATION AND VMC	N/A	W/U	N/A	Notification that the pilot is responsible for maintaining separation from other traffic and is also responsible for maintaining Visual Meteorological Conditions.	N/A

TBL ENR 7.2–20

Supplemental Downlink Message Elements (SUPD)

CPDLC Message Sets			**Operational Definition in PANS–ATM (Doc 4444)**		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
DM65 DUE TO WEATHER	DM65 DUE TO WEATHER	N	SUPD–1	Indication that the associated message is issued due to specified reason.	DUE TO (*specified reason downlink*)
DM66 DUE TO AIRCRAFT PERFORMANCE	DM66 DUE TO AIRCRAFT PERFORMANCE	N	SUPD–1	Indication that the associated message is issued due to specified reason.	DUE TO (*specified reason downlink*)

TBL ENR 7.2−21

Free Text Uplink Message Elements

CPDLC Message Sets			Operational Definition in PANS−ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
UM169 *(free text)*	N/A	R	N/A	A message or part of a message that does not conform to any standard message element in the PANSATM (Doc 4444).	N/A
UM169 *(free text)* CPDLC NOT IN USE UNTIL FURTHER NOTIFICATION	N/A	R	N/A	See Note	N/A
UM169 *(free text)* "[facility designation]" (for Altimeter reporting Station)	N/A	R	N/A	See Note	N/A
(free text) "[facility designation] ALTIMETER MORE THAN ONE HOUR" OLD	N/A	R	N/A	See Note	N/A
UM169 *(free text)* DUE TO WEATHER	N/A	R	N/A	See Note	N/A
UM169 *(free text)* REST OF ROUTE UNCHANGED	N/A	R	N/A	See Note	N/A
(free text) TRAFFIC FLOW MANAGEMENT REROUTE	N/A	R	N/A	See Note	N/A

NOTE−
These are FAA scripted free text messages with no GOLD equivalent.

TBL ENR 7.2–22

Free Text Downlink Message Elements

CPDLC Message Sets			Operational Definition in PANS–ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
DM67 (*free text*) *Note – Medium (M) alert attribute.*	N/A	Y	N/A	N/A	N/A
DM68 *(free text)* *Note 1. – Urgency or Medium (M) alert attribute.* *Note 2. – Selecting any of the emergency message elements will result in this message element being enabled for the flight crew to include in the emergency message at their discretion.*	N/A	Y	N/A	N/A	N/A

TBL ENR 7.2−23

System Management Uplink Message Elements (SYSU)

CPDLC Message Sets			Operational Definition in PANS−ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
UM159 ERROR *(error information)*	UM159 ERROR *(error information)*	N	SYSU−1	System−generated notification of an error.	ERROR *(error information)*
UM160 NEXT DATA AUTHORITY *(ICAO facility designation)* *Note − The facility designation is required.*	UM160 NEXT DATA AUTHORITY *(facility)* *Note − Facility parameter can specify a facility designation or no facility.*	N	SYSU−2	System−generated notification of the next data authority or the cancellation thereof.	NEXT DATA AUTHORITY *(facility designation[O])*
UM161 END SERVICE	N/A	NE	N/A	Notification to the avionics that the data link connection with the current data authority is being terminated.	N/A
UM162 SERVICE UNAVAILABLE	N/A	NE	N/A	Notification that the ground system does not support this message.	N/A

TBL ENR 7.2−24

System Management Downlink Message Elements (SYSD)

CPDLC Message Sets			Operational Definition in PANS−ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
DM62 ERROR *(error information)*	DM62 ERROR *(error information)*	N	SYSD−1	System−generated notification of an error.	ERROR *(error information)*
DM63 NOT CURRENT DATA AUTHORITY	DM63 NOT CURRENT DATA AUTHORITY	N	SYSD−3	System−generated rejection of any CPDLC message sent from a ground facility that is not the current data authority.	NOT CURRENT DATA AUTHORITY
DM64 *(ICAO facility designation)* *Note − Use by FANS 1/A aircraft in B1 environments.*	N/A	N	N/A	System−generated notification that the ground system is not designated as the next data authority (NDA), indicating the identity of the current data authority (CDA). Identity of the NDA, if any, is also reported.	N/A

TBL ENR 7.2−25

Additional Uplink Messages

CPDLC Message Sets			Operational Definition in PANS−ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
UM176 MAINTAIN OWN SEPARATION AND VMC	N/A	W/U	N/A	Notification that the pilot is responsible for maintaining separation from other traffic and is also responsible for maintaining Visual Meteorological Conditions.	N/A

TBL ENR 7.2–26
Additional Downlink Messages

CPDLC Message Sets			Operational Definition in PANS–ATM (Doc 4444)		
FANS 1/A	**ATN B1**	**Response**	**Message Element Identifier**	**Message Element Intended Use**	**Format for Message Element Display**
DM74 REQUEST TO MAINTAIN OWN SEPARATION AND VMC	N/A	N	N/A	States a desire by the pilot to provide his/her own separation and remain in VMC.	N/A
DM78 AT (*time*) (*distance*) (*tofrom*) (*position*)	N/A	N	N/A	At the specified time, the aircraft's position was as specified.	N/A

ENR 7.5 Operational Policy Performance–Based Navigation (PBN) and Performance–Based Communication and Surveillance (PBCS)

1. Introduction

1.1 Distance–based longitudinal separation minima using ADS–C is implemented in the Oakland Oceanic, Anchorage Oceanic and New York Oceanic airspace as specified in TBL ENR 7.5–1.

TBL ENR 7.5–1
Minima

Minima				
Standard	**RNP**	**RCP**	**RSP**	**Maximum ADS–C Periodic Reporting Interval**
50 NM	10	240	180	27 minutes
50 NM	4	240	180	32 minutes
30 NM	4	240	180	10 minutes
20 NM	4	240	180	192 seconds

1.2 Aircraft Future Air Navigation System (FANS) 1/A communications, navigation and surveillance (CNS) capabilities, interfaced with Advanced Technology and Oceanic Procedures (ATOP), are required for ADS–C distance based separation to be applied.

NOTE–
1. *ADS–C distance based separation standards may not be applied to aircraft utilizing High Frequency Data Link (HFDL).*

2. *ADS–C distance based separation is not currently authorized in the Anchorage Arctic FIR.*

1.3 23 NM lateral separation is applied between RNP 4 aircraft capable of RSP 180 and RCP 240 with ADS–C waypoint change event and 5 NM lateral deviation event contracts established.

2. Application

2.1 Oakland, New York and Anchorage ARTCCs will apply the following policies to the use of ADS–C distance based separation:

2.1.1 The separation will be applied to pairs of suitably equipped pairs of aircraft;

2.1.2 Minimum ADS–C based longitudinal separation between RNP 4 eligible aircraft and RNP 10 eligible aircraft is 50 NM; and

2.1.3 Lateral and longitudinal separation standards applied between RNP 10 and non–RNP 10 aircraft remains unchanged.

3. Aircraft and Operator Eligibility for Performance–Based Separation

3.1 The aircraft and operator must be authorized by the State of the Operator or the State of Registry, as appropriate, for 50 NM: at a minimum, RNP 4 or RNAV 10, RCP 240, and RSP 180; and for 30 NM: at a minimum, RNP 4, RCP 240, and RSP 180 operations;

3.2 The aircraft must be equipped with a minimum of two approved long range navigation systems that will enable the aircraft to maintain RNP 4 for the duration of flight in the applicable airspace;

Appendix 1. FAA Form 7233–4 – International Flight Plan

a. The FAA will accept a flight plan in international format for IFR, VFR, SFRA, and DVFR flights. File the flight plan electronically via a Flight Service Station (FSS), FAA contracted flight plan filing service, or other commercial flight plan filing service. Depending on the filing service chosen, the method of entering data may be different but the information required is generally the same.

b. The international flight plan format is mandatory for:

1. Any flight plan filed through a FSS or FAA contracted flight plan filing service; with the exception of Department of Defense flight plans and civilian stereo route flight plans, which can still be filed using the format prescribed in FAA Form 7233–1.

NOTE–
DOD Form DD–175 and FAA Form 7233–1 are considered to follow the same format.

2. Any flight that will depart U.S. domestic airspace. For DOD flight plan purposes, offshore Warning Areas may use FAA Form 7233–1 or military equivalent.

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

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

c. Flight Plan Contents

1. A flight plan will include information shown below:

(a) Flight Specific Information (TBL 1–1)

(b) Aircraft Specific Information (TBL 1–19)

(c) Flight Routing Information (TBL 1–20)

(d) Flight Specific Supplementary Information (Item 19)

2. The tables indicate where the information is located in the international flight plan format, the information required for U.S. domestic flights, and the location of equivalent information in the domestic flight plan format.

3. International flights, including those that temporarily leave domestic U.S. airspace and return, require all applicable information in the international flight plan. Additional information can be found in ICAO Doc. 4444 (Procedures for Air Navigation Services, Air Traffic Management), and ICAO Doc. 7030 (Regional Supplemental Procedures) as well as the Aeronautical Information Publications (AIPs), Aeronautical Information Circulars (AICs), and NOTAMs of applicable other countries.

TBL 1–1
Flight Specific Information

Item	International Flight Plan (FAA Form 7233–4)	Domestic U.S. Requirements	Equivalent Item on Domestic Flight Plan (FAA Form 7233–1)
Aircraft Identification	Item 7	Required	Item 2
Flight Rules	Item 8	Required	Item 1
Type of Flight	Item 8	No need to file for domestic U.S. flight	N/A
Equipment and Capabilities	Item 10 Item 18 PBN/; NAV/; COM/; DAT/; SUR/	Required	Item 3
Date of Flight	Item 18 DOF/	Include when date of flight is not today	N/A
Reasons for Special Handling	Item 18 STS/; RMK/	Include when special category is applicable	Item 11
Remarks	Item 18 RMK/	Include when necessary	Item 11
Operator	Item 18 OPR/	No need to file for domestic U.S. flight	N/A
Flight Plan Originator	Item 18 ORGN/	No need to file for domestic U.S. flight	N/A

d. Instructions for Flight–Specific Information Items

1. Aircraft Identification (Item 7) Aircraft Identification is always required. Aircraft identification must not exceed seven alphanumeric characters and be either:

(a) The ICAO designator for the aircraft operating agency, followed by the flight identification (for example, KLM511, NGA213, JTR25). When in radiotelephony the call sign to be used by the aircraft will consist of the ICAO telephony designator for the operating agency followed by the flight identification (for example, KLM511, NIGERIA213, JESTER25);

(b) The nationality or common mark and registration of the aircraft (for example, EIAKO, 4XBCD, N2567GA), when:

(1) In radiotelephony, the call sign to be used by the aircraft will consist of this identification alone (for example, CGAJS) or preceded by the ICAO telephony designator for the aircraft operating agency (for example, BLIZZARD CGAJS); or

(2) The aircraft is not equipped with radio.

NOTE–
1. *Standards for nationality, common and registration marks to be used are contained in Annex 7, Chapter 2.*

2. *Provisions for using radiotelephony call signs are contained in Annex 10, Volume II, Chapter 5. ICAO designators and telephony designators for aircraft operating agencies are contained in Doc 8585—Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services.*

NOTE–
Some countries' aircraft identifications begin with a number, which cannot be processed by U.S. ATC automation. The FAA will add a leading letter temporarily to gain automation acceptance for aircraft identifications that begin with a numeral. For flight–processing systems (e.g., ERAM or STARS) which will not accept a call sign that begins with a number, if the call sign is 6 characters or less, add a Q at the beginning of the call sign. If the call sign is 7 characters, delete the first character and replace it with a Q. Put the original call sign in the remarks section of the flight plan.

EXAMPLE–
9HRA becomes Q9HRA
5744233 becomes Q744233

2. Flight Rules (Item 8a)

(a) Flight rules are always required.

(b) Flight rules must indicate IFR (I) or VFR (V).

(c) For composite flight plans, submit separate flight plans for the IFR and VFR portions of the flight. Specify in Item 15 the point or points where change of flight rules is planned. The IFR plan will be routed to ATC, and the VFR plan will be routed to a Flight Service for Search and Rescue services.

NOTE–
The pilot is responsible for opening and closing the VFR flight plan. ATC does not have knowledge of a VFR flight plan's status.

3. Type of Flight (Item 8b)

(a) The type of flight is optional for flights remaining wholly within U.S. domestic airspace.

(b) Indicate the type of flight as follows:

- G – General Aviation
- S – Scheduled Air Service
- N – Non–Scheduled Air Transport Operation
- M – Military
- X – other than any of the defined categories above

4. Equipment and Capabilities (Item 10, Item 18 NAV/, COM/, DAT/, SUR/)

(a) Equipment and capabilities that can be filed in a flight plan include:

- Navigation capabilities in Item 10a, Item 18 PBN/, and Item 18 NAV/
- Voice communication capabilities in Item 10a and Item 18 COM/
- Data communication capabilities in Item 10a and Item 18 DAT/
- Approach capabilities in Item 10a and Item 18 NAV/
- Surveillance capabilities in Item 10b and Item 18 SUR/

(b) Codes allowed in Item 10a are shown in Table 1–2. Codes allowed in Item 10b are shown in TBL 1–3. Codes recognized in Item 18 NAV/, COM/, DAT/, and SUR/ are shown in TBL 1–4. Note that other service providers may define additional allowable (and required) codes for use in Item 18 NAV/, COM/, DAT/, or SUR/. Codes to designate PBN capability are described in TBL 1–5.

Radio communication, navigation and approach aid equipment and capabilities

ENTER one letter as follows:

N if no COM/NAV/approach aid equipment for the route to be flown is carried, or the equipment is unserviceable,

OR

S if standard COM/NAV/approach aid equipment for the route to be flown is carried and serviceable (see Note 1),

AND/OR

ENTER one or more of the following letters from TBL 1–2 to indicate the serviceable COM/NAV/ approach aid equipment and capabilities available.

TBL 1–2

Item 10a Navigation, Communication, and Approach Aid Capabilities

A	GBAS Landing System	J7	CPDLC FANS 1/A SATCOM (Iridium)
B	LPV (APV with SBAS)	K	MLS
C	LORAN C	L	ILS
D	DME	M1	ATC SATVOICE (INMARSAT)
E1	FMC WPR ACARS	M2	Reserved
E2	D–FIS ACARS	M3	ATC RTF (Iridium)
E3	PDC ACARS	O	VOR
F	ADF	P1	CPDLC RCP 400 *(See Note 7)*
G	GNSS *(See Note 2)*	P2	CPDLC RCP 240 *(See Note 7)*
H	HF RTF	P3	SATVOICE RCP 400 *(See Note 7)*
I	Inertial Navigation	P4–P9	Reserved for RCP
J1	CPDLC ATN VDL Mode 2 *(See Note 3)*	R	PBN Approved *(See Note 4)*
J2	CPDLC FANS 1/A HFDL	T	TACAN
J3	CPDLC FANS 1/A VDL Mode A	U	UHF RTF
J4	CPDLC FANS 1/A Mode 2	V	VHF RTF
J5	CPDLC FANS 1/A SATCOM (INMARSAT)	W	RVSM Approved
J6	Reserved	X	MNPS Approved /North Atlantic (NAT) High Level Airspace (HLA) approved
		Y	VHF with 8.33 kHz Channel Spacing Capability
		Z	Other equipment carried or other capabilities *(See Note 5)*

Any alphanumeric characters not indicated above are reserved.

NOTE–

1. *If the letter "S" is used, standard equipment is considered to be VHF RTF, VOR, and ILS, unless another combination is prescribed by the appropriate ATS authority.*

2. *If the letter "G" is used, the types of external GNSS augmentation, if any, are specified in Item 18 following the indicator NAV/ and separated by a space.*

EXAMPLE–

NAV/SBAS

3. *See RTCA/EUROCAE Interoperability Requirements Standard for ATN Baseline 1 (ATN B1 INTEROP Standard – DO –280B/ED–110B) for data link services air traffic control clearance and information/air traffic control communications management/air traffic control microphone check.*

4. *If the letter "R" is used, the performance–based navigation levels that can be met are specific in Item 18 following the indicator PBN/. Guidance material on the application of performance–based navigation to a specific route segment, route, or area is contained in the Performance–based Navigation (PBN) Manual (Doc 9613)*

5. *If the letter "Z" is used, specify in Item 18 the other equipment carried or other capabilities, preceded by COM/, NAV/, and/or DAT, as appropriate.*

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

7. *Guidance on the application of performance–based communication, which prescribes RCP to an air traffic service in a specific area, is contained in the Performance–based Communication and Surveillance (PBCS) Manual (Doc 9869).*

TBL 1–3

Item 10b Surveillance Capabilities

ENTER "N" if no surveillance equipment for the route to be flown is carried, or the equipment is unserviceable,

or

ENTER One or more of the following descriptors, to a maximum of 20 characters, to describe the serviceable surveillance equipment and/or capabilities on board.

ENTER no more than one transponder code (Modes A, C, or S)

SSR Modes A and C:

A	Transponder	Mode A (4 digits – 4096 codes)
C	Transponder	Mode A (4 digits – 4096 codes) and Mode C

SSR Mode S:

E	Transponder	Mode S, including aircraft identification, pressure–altitude, and extended squitter (ADS–B) capability
H	Transponder	Mode S, including aircraft identification, pressure–altitude, and enhanced surveillance capability
I	Transponder	Mode S, including aircraft identification, but no pressure–altitude capability
L	Transponder	Mode S, including aircraft identification, pressure–altitude, extended squitter (ADS–B), and enhanced surveillance capability
P	Transponder	Mode S, including pressure–altitude, but no aircraft identification capability
S	Transponder	Mode S, including both pressure–altitude and aircraft identification capability
X	Transponder	Mode S, with neither aircraft identification nor pressure–altitude

NOTE–

Enhanced surveillance capability is the ability of the aircraft to down–link aircraft derived data via Mode S transponder.

ADS–B:

B1	ADS–B with dedicated 1090 MHz ADS–B "out" capability
B2	ADS–B with dedicated 1090 MHz ADS–B "out" and "in" capability
U1	ADS–B with "out" capability using UAT
U2	ADS–B with "out" and "in" capability using UAT
V1	ADS–B with "out" capability using VDL Mode 4
V2	ADS–B with "out" and "in" capability using VDL Mode 4

NOTE–

File no more than one code for each type of capability, e.g., file B1 or B2 and not both

ADS–C:

D1	ADS–C with FANS 1/A capabilities
G1	ADS–C with ATN capabilities

Alphanumeric characters not included above are reserved.

EXAMPLE–

ADE3RV/HB2U2V2G1

NOTE–

1. *The RSP specification(s), if applicable, will be listed in Item 18 following the indicator SUR/, using the characters "RSP" followed by the specifications value. Currently RSP180 and RSP400 are in use.*

2. *List additional surveillance equipment or capabilities in Item 18 following the indicator SUR/.*

TBL 1–4

Item 18 NAV/, COM/, DAT/, and SUR/ capabilities used by FAA

Item	Purpose	Entry	Explanation
NAV/ entries used by FAA	Radius–to–Fix (RF) capability	Z1	RNP–capable flight is authorized for Radius to Fix operations.
	Fixed Radius Transitions (FRT)	Z2	RNP–capable flight is authorized for Fixed Radius Transitions.
	Time of Arrival Control (TOAC)	Z5	RNP–capable flight is authorized for Time of Arrival Control.
	Advanced RNP (A–RNP)	P1	Flight is authorized for A–RNP operations.
	Helicopter RNP 0.3	R1	Flight is authorized for RNP 0.3 operations (pertains to helicopters only).
	RNP 2 Continental	M1	Flight is authorized for RNP 2 continental operations.
	RNP 2 Oceanic/Remote	M2	Flight is authorized for RNP 2 oceanic/remote operations.
COM/ entries used by FAA	N/A	N/A	The FAA currently does not use any entries in COM/.
DAT/ entries used by FAA	Capability and preference for delivery of pre–departure clearance	Priority number followed by: • FANS • FANSP • PDC • VOICE	Entries are combined with a priority number, for example; 1FANS2PDC means a preference for departure clearance delivered via FANS 1/A; with capability to also receive the clearance via ACARS PDC. FANS = FANS 1/A DCL FANSP = FANS 1/A+ DCL PDC = ACARS PDC VOICE = PDC via voice (no automated delivery)
SUR/ entries used by FAA	Req. Surveillance Performance	RSP180	Aircraft is authorized for Required Surveillance Performance RSP180
		RSP400	Aircraft is authorized for Required Surveillance Performance RSP400
	ADS–B	A2	Aircraft has 1090 MHz Extended Squitter ADS–B compliant with RTCA DO–260B (complies with FAA requirements)
		A2	Aircraft has 978 MHz UAT ADS–B compliant with RTCA DO–282B (complies with FAA requirements)

NOTE–

1. *Other entries in NAV/, COM/, DAT/, and SUR/ are permitted for international flights when instructed by other service providers. Direction on use of these capabilities by the FAA is detailed in the following sections.*

2. *In NAV/, descriptors for advanced capabilities (Z1, P1, R1, M1, and M2) should be entered as a single character string with no intervening spaces, and separated from any other entries in NAV/ by a space.*

EXAMPLE–

NAV/Z1P1M2 SBAS

TBL 1–5

Item 18. PBN/ Specifications

(Include as many of the applicable descriptors, up to a maximum of 8 entries (not more than 16 characters).

PBN/	RNAV SPECIFICATIONS
A1	RNAV 10 (RNP 10)
B1	RNAV 5 all permitted sensors
B2	RNAV 5 GNSS
B3	RNAV 5 DME/DME
B4	RNAV 5 VOR/DME
B5	RNAV 5 INS or IRS
B6	RNAV 5 LORAN C
C1	RNAV 2 all permitted sensors
C2	RNAV 2 GNSS
C3	RNAV 2 DME/DME
C4	RNAV 2 DME/DME/IRU
D1	RNAV 1 all permitted sensors
D2	RNAV 1 GNSS
D3	RNAV 1 DME/DME
D4	RNAV 1 DME/DME/IRU
PBN/	**RNP SPECIFICATIONS**
L1	RNP 4
O1	Basic RNP 1 all permitted sensors
O2	Basic RNP 1 GNSS
O3	Basic RNP 1 DME/DME
O4	Basic RNP 1 DME/DME/IRU
S1	RNP APCH
S2	RNP APCH with BARO–VNAV
T1	RNP AR APCH with RF (special authorization required)
T2	RNP AR APCH without RF (special authorization required)

NOTE–

1. *PBN Codes B1–B6 indicates RNAV 5 capability. The FAA considers these B codes to be synonymous and qualifying for point–to–point routing but not for assignment to the PBN routes shown in the table.*

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

3. *The PBN/ specifications are allowed per ICAO Doc. 4444. The FAA makes use of a subset of these codes as described in the section on filing navigation capability.*

(c) The following sections detail what capabilities need to be provided to obtain services from the FAA for:

- IFR flights (general).
- Assignment of Performance–Based Navigation (PBN) routes.
- Automated Departure clearance (via Datacom DCL or PDC).
- Reduced Vertical Separation Minima (if requesting FL 290 or above).
- Reduced Separation in Oceanic Airspace.

(d) Capabilities such as voice communications, required communications performance, approach aids, and ADS–C, are not required in a flight plan that remains entirely within domestic airspace.

(e) Flights that leave domestic United States airspace may be required to include additional capabilities, per requirements for the FIRs being overflown. Consult the appropriate State Aeronautical Information Publications for requirements.

(f) Include the capability only if:

- The requisite equipment is 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. For example, all U.S. civil operators require either Operations Specification, Management Specification, or Letter of Authorization B036, as applicable, in order to include NAV/M2 (RNP 2 (oceanic/remote)), PBN/A1 (RNAV 10 (RNP 10)), or PBN/L1 (RNP 4) in Item 18.

5. Filing equipment and capability in an IFR Flight Plan. This section details the minimum requirements to identify capabilities in an IFR flight plan for flights in the domestic United States. Other requirements to file a capability are associated with obtaining specific services as described in subsequent sections. The basic capabilities that must be addressed include Navigation, Transponder, Voice, and ADS–B Out as described below. A designator for "Standard" capability is also allowed to cover a suite of commonly carried voice, navigation, and approach equipment with one code.

(a) Standard Capability and No Capability (Item 10a)

- Use "S" if VHF radio, VOR, and ILS equipment for the route to be flown are carried and serviceable. Use of the 'S' removes the need to list these three capabilities separately.
- Use "N" if no communications, navigation, or approach aid equipment for the route to be flown are carried or the equipment is unserviceable.
- When there is no transponder, ADS–B, or ADS–C capability then file only the letter 'N' in Item 10b.

(b) Navigation Capabilities (Item 10a, Item 18 NAV/)

- Indicate radio navigation capability by filing one or more of the codes in TBL 1–6.
- Indicate Area Navigation (RNAV) capability by filing one or more of the codes in TBL 1–7.

TBL 1–6
Radio Navigation Capabilities

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

TBL 1–7
Area Navigation Capabilities

Capability	Item 10a	Item 18 NAV/
GNSS	G	SBAS (if WAAS equipped) GBAS (if LAAS equipped)
INS	I	
DME / DME	DR	
VOR / DME	DOR	

NOTE–
1. *SBAS – Space–Based Augmentation System*
GBAS – Ground–Based Augmentation System

2. *No PBN/ code needs to be filed to indicate the ability to fly point−to−point routes using GNSS or INS.*
3. *Filing one of these four area navigation capabilities as shown does not indicate performance based navigation sufficient for flying Q−Routes, T−Routes, or RNAV SIDs or STARs. To qualify for these routes, see the section on Performance Based Navigation Routes.*

(c) Transponder Capabilities (Item 10b)

• For domestic flights, it is not necessary to indicate Mode S capability. It is acceptable to simply file one of the following codes in TBL 1−8.

TBL 1−8
Mode C

Capability	Item 10b
Transponder with no Mode C	A
Transponder with Mode C	C

• International flights must file in accordance with relevant AIPs and regional supplements. Include one of the Mode S codes in TBL 1−9, if appropriate.

NOTE−
File only one transponder code.

TBL 1−9
Mode S

Capability	Aircraft ID	Altitude Encoding	Item 10b
Mode S Transponder	No	No	X
Mode S Transponder	No	Yes	P
Mode S Transponder	Yes	No	I
Mode S Transponder	Yes	Yes	S
Mode S Transponder with Extended Squitter	Yes	Yes	E
Enhanced Mode S Transponder	Yes	Yes	H
Enhanced Mode S Transponder with Extended Squitter	Yes	Yes	L

(d) ADS−B Capabilities (Item 10b, Item 18 SUR/ and Item 18 CODE/)

• Indicate ADS−B capability as shown in TBL 1−10. The accompanying entry in Item 18 indicates that the equipment is compliant with 14 CFR §91.227. Some ADS−B equipment used in other countries is based on an earlier standard and does not meet U.S. requirements.

• Do not file an ADS−B code for “in” capability only. There is currently no way to indicate that an aircraft has “in” capability but no “out” capability.

• For aircraft with ADS−B “out” on one frequency and “in” on another, include only the ADS−B “out” code. For example, B1 or U1, (See TBL 1−10).

TBL 1−10
ADS−B Capabilities

Capability	Item 10b	Item 18 SUR/
1090 ES Out Capability	B1	A2
1090 ES Out and In Capability	B2	A2
UAT Out Capability	U1	A2
UAT Out and In Capability	U2	A2

(e) Voice Communication Capabilities (Item 10a)

The FAA does not require indication of voice communication capabilities in a flight plan for domestic flights, but it is permissible. For flights outside the domestic United States, all relevant capabilities must be indicated as follows (See TBL 1–11):

TBL 1–11
Voice Communication Capabilities

Capability	Item 10a
VHF Radio	V
UHF Radio	U
HF Radio	H
VHF Radio (8.33 kHZ Spacing)	Y
ATC SATVOICE (INMARSAT)	M1
ATC SATVOICE (Iridium)	M3

(f) Approach Aid Capabilities (Item 10a).

The FAA does not require filing of approach aid capability in order to request a specific type of approach, however any of the codes indicated in TBL 1–12 in 10a are permissible.

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

TBL 1–12
Approach Aid Capabilities

Capability	Item 10a
ILS	L
MLS	K
LPV Approach (APV with SBAS) (WAAS)	B
GBAS Landing System (LAAS)	A

6. Performance–Based Navigation Routes (Item 10a, Item 18 PBN/, Item 18 NAV/)– When planning to fly routes that require PBN capability, file the appropriate capability as shown in TBL 1–13.

TBL 1–13

Filing for Performance Based Navigation (PBN) Routes

Type of Routing	Capability Required	Item 10a	Item 18 PBN/ See NOTE 2	Item 18 NAV/ See NOTE 3	Notes
RNAV SID or STAR (See NOTE 1)	RNAV 1	GR	D2		If GNSS
		DIR	D4		If DME/DME/IRU
RNP SID or STAR (See NOTE 2)	RNP 1 GNSS	GR	O2		If GNSS only
	RNP 1 GNSS	DGIR	O1		If GNSS primary and DME/DME/IRU backup
RNP SID or STAR with RF required (See NOTE 2)	RNP 1 GNSS	GRZ	O2	Z1	If GNSS only
	RNP 1 GNSS	DGIRZ	O1	Z1	If GNSS primary and DME/DME/IRU backup
Domestic Q–Route (see separate requirements for Gulf of America Q–Routes)	RNAV 2	GR	C2		If GNSS
		DIR	C4		If DME/DME/IRU
T–Route	RNAV 2	GR	C2		GNSS is required for T–Routes
RNAV (GPS) Approach	RNP Approach, GPS	GR	S1		*Domestic arrivals do not need to file PBN approach capabilities to request the approach.*
RNAV (GPS) Approach	RNP Approach, GPS Baro–VNAV	GR	S2		
RNAV (GPS) Approach with RF required	RNP Approach, GPS RF Capability	GRZ	S2	Z1	
RNP AR Approach with RF	RNP (Special Authorization Required) RF Leg Capability	GR	T1		
RNP AR Approach without RF	RNP (Special Authorization Required)	GR	T2		

NOTE–

1. *If the flight is requesting an RNAV SID only (no RNAV STAR) or RNAV STAR only (no RNAV SID) then consult guidance on the FAA website at https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/air_traffic_services/flight_plan_filing.*

2. *PBN descriptor D1 includes the capabilities of D2, D3, and D4. PBN descriptor B1 includes the capabilities of B2, B3, B4, and B5. PBN descriptor C1 includes the capabilities of C2, C3, and C4.*

3. *In NAV/, descriptors for advanced capabilities (Z1, P1, R1, M1, and M2) should be entered as a single character string with no intervening spaces, and separated from any other entries in NAV/ by a space.*

EXAMPLE–

NAV/Z1P1M2 SBAS

7. Automated Departure Clearance Delivery (DCL or PDC). When planning to use automated pre–departure clearance delivery capability, file as indicated below.

(a) PDC provides pre–departure clearances from the FAA to the operator's designated flight operations center, which then delivers the clearance to the pilot by various means. Use of PDC does not require any special flight plan entry.

(b) DCL provides pre–departure clearances from the FAA directly to the cockpit/FMS via Controller Pilot Datalink Communications (CPDLC). Use of DCL requires flight plan entries as follows:

- Include CPDLC codes in Item 10a only if the flight is capable of en route/oceanic CPDLC, the codes are not required for DCL.
- Include Z in Item 10a to indicate there is information provided in Item 18 DAT/.
- Include the clearance delivery methods of which the flight is capable, and order of preference in Item 18 DAT/. (See AIM 5–2–2)
  - VOICE – deliver clearance via Voice
  - PDC – deliver clearance via PDC
  - FANS – deliver clearance via FANS 1/A
  - FANSP – deliver clearance via FANS 1/A+

EXAMPLE–
DAT/1FANS2PDC
DAT/1FANSP2VOICE

8. Operating in Reduced Vertical Separation Minima (RVSM) Airspace (Item 10a). When planning to fly in RVSM airspace (FL 290 up to and including FL 410) then file as indicated below.

(a) If capable and approved for RVSM operations, per AIM 4–6–1, Applicability and RVSM Mandate (Date/Time and Area), file a W in Item 10a. Include the aircraft registration mark in Item 18 REG/, which is used to post–operationally monitor the safety of RVSM operations.

- Do not file a "W" in Item 10a if the aircraft is capable of RVSM operations, but is not approved to operate in RVSM airspace.
- If RVSM capability is lost after the flight plan is filed, request that ATC remove the 'W' from Item 10a.

(b) When requesting to operate non–RVSM in RVSM airspace, using one of the exceptions identified in AIM 4–6–10, do not include a "W" in Item 10a. Include STS/NONRVSM in Item 18. STS/NONRVSM is used only as part of a request to operate non–RVSM in RVSM airspace.

9. Eligibility for Reduced Oceanic Separation. Indicate eligibility for the listed reduced separation minima as indicated in the tables below. Full Operational Requirements for these services are found in the U.S. Aeronautical Information Publication (AIP) ENR 7, Oceanic Operations, available at http://www.faa.gov/air_traffic/publications/atpubs/aip_html/index.html.

TBL 1–14

Filing for Gulf of America 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 America CTA, then put the notation NONRNP10 in Item 18 RMK/, preferably first.

TBL 1–15

Filing for 50 NM Lateral Separation in Anchorage Arctic FIR

Dimension of Separation	Separation Minima	ADS–C Surveillance Requirements	Comm. Requirement	PBN Requirement	Flight Plan Entries			
					ADS–C in Item 10b	CPDLC in Item 10a	PBN in Item 18 PBN/ (also File 'R' in Item 10a)	PBN in Item 18 NAV/
Lateral	50 NM	N/A (ADS–C not required)	None beyond normal requirements for the airspace	RNP10 or RNP4	N/A	N/A	A1 or L1	N/A

TBL 1–16

Filing for 20 NM, 30 NM and 50 NM Longitudinal; and 23 NM and 30 NM Lateral 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
Longitudinal	20 NM	ADS–C position report at least every 192 seconds	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
Lateral	23 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

TBL 1–17

Filing for Reduced Oceanic Separation when RSP/RCP Required on March 29, 2018

Dimension of Separation	Separation Minima	RSP Requirement	RCP Requirement	PBN Requirement	Flight Plan Entries				
					RSP in Item 18 SUR/	RCP in Item 10a	CDPLC in Item10a	PBN in Item 18 PBN/ (also File 'R' in Item 10a)	PBN in Item 18 NAV/
Lateral	55.5 km 30 NM	180	240	RNP 2 or RNP 4	RSP180	P2	J5, and/or J6, and/or J7	L1	
Performance–based Longitudinal	5 Minutes	180	240	RNAV 10 (RNP 10) RNP 4, or RNP 2 oceanic/ remote	RSP180	P2	J5, and/or J6, and/or J7	A1 or L1	M2
Performance–based Longitudinal	55.5 km 30 NM	180	240	RNP 4 or RNP 2 oceanic/ remote	RSP180	P2	J5, and/or J6, and/or J7	L1	M2
Performance–based Longitudinal	93 km 50 NM	180	240	RNAV 10 (RNP 10) or RNP 4	RSP180	P2	J5, and/or J6, and/or J7	A1 or L1	

NOTE–
1. *Filing of RNP 2 alone is not supported in FAA controlled airspace; PBN/L1 (for RNP 4) or PBN/A1 (for RNP 10) must be filed to obtain the indicated separation.*

2. *Use of "RNP 2" in NAV/ signifies continental RNP 2 (and means the same as M1). Continental RNP 2 is not adequate for reduced oceanic separation. Descriptor M2 indicates RNP 2 global/oceanic RNP 2 capability.*

10. Date of Flight (Item 18 DOF/)

Flights planned 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 TBL 1–18.

NOTE–
Priority for a flight is not automatically granted based on filing one of these codes but is based on documented procedures. In some cases, additional information may also be required in remarks; follow all such instructions as well.

TBL 1–18
Special Handling

Special Handling	Item 18 STS/
Flight operating in accordance with an altitude reservation	ALTRV
Flight approved for exemption from ATFM measures by the appropriate ATS authority	ATFMX
Fire Fighting	FFR
Flight check for calibration of NAVAIDS	FLTCK
Flight carrying hazardous material(s)	HAZMAT
Flight with Head of State status	HEAD
Medical flight declared by medical authorities	HOSP
Flight operating on a humanitarian mission	HUM
Flight for which a military entity assumes responsibility for separation of military aircraft	MARSA
Life critical medical emergency evacuation	MEDEVAC
Non–RVSM capable flight intending to operate in RVSM airspace	NONRVSM
Flight engaged in a search and rescue mission	SAR
Flight engaged in military, customs, or police services	STATE

(b) Any other requests for special handling must be made in Item 18 RMK/.

(c) Include plain–language remarks when required by ATC or deemed necessary. Do not use special characters, for example; / * – = +.

EXAMPLE–
RMK/NRP
RMK/DVRSN

12. Remarks

Include when necessary.

13. Operator (Item 18 OPR/)

When the operator is not obvious from the aircraft identification, the operator may be indicated.

EXAMPLE–
OPR/NETJETS

14. Flight Plan Originator (Item 18 ORGN/)

(a) VFR flight plans originating outside of FAA FSS or FAA contracted flight plan filing services must enter the 8–letter AFTN address of the service where the flight plan was originally filed. Alternately, enter the name of the service where the FPL was originally filed. This information is critical to locating the FPL originator in the event additional information is needed.

(b) For IFR flight plans, the original filers AFTN address may be indicated, which is helpful in cases where a flight plan has been forwarded.

EXAMPLE–
ORGN/Acme Flight Plans
ORGN/KDENXLDS

TBL 1–19
Aircraft Specific Information

Item	International Flight Plan (FAA Form 7233–4)	Domestic U.S. Requirements	Equivalent Item on Domestic Flight Plan (FAA Form 7233–1)
Number of Aircraft	Item 9	Included when more than one a/c in flight	Item 3
Type of Aircraft	Item 9	Required	Item 3
Wake Turbulence Category	Item 9	Required	N/A
Aircraft Registration	Item 18 REG/	Include when planning to operate in RVSM airspace	N/A
Mode S Address	Item 18 CODE/	Not required within U.S. controlled airspace	N/A
SELCAL Codes	Item 18 SEL/	Include when SELCAL equipped	N/A
Performance Category	Item 18 PER/	Not required for domestic flights	N/A

e. Instructions for Aircraft–Specific Information.

1. Number of Aircraft (Item 9) when there is more than one aircraft in the flight; indicate the number of aircraft up to 99.

2. Type of Aircraft (Item 9)

(a) Provide the appropriate 2–4 character aircraft type designator listed in FAA Order JO 7360.1, Aircraft Type Designators. FAA Order JO 7360.1 may be located at: Orders & Notices (faa.gov), then enter 7360.1 in the Search box.

(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

TBL 1–20
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 accessible through 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

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 accessible through 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 accessible through 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.*
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.

FIG 1–1

FAA Form 7233–4, Pre–Flight Pilot Checklist and International Flight Plan

PRIVACY ACT STATEMENT: This statement is provided pursuant to the Privacy Act of 1974, 5 USC § 552a: The authority for collecting this information is contained in 49 U.S.C. §§ 40113, 44702, 44703, 44709, and 14 C.F.R. Part 6 - [Part 61, 63, 65, or 67. The principal purpose for which the information is intended to be used is to allow you to submit your flight plan. Submission of the data is voluntary. Failure to provide all required information may result in you not being able to submit your flight plan. The information collected on this form will be included in a Privacy Act System of Records known as DOT/FAA 847, titled "Aviation Records on Individuals" and will be subject to the routine uses published in the System of Records Notice (SORN) for DOT/FAA 847 (see www.dot.gov/privacy/privacyactnotices).

Paperwork Reduction Act Statement: A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB Control Number. The OMB Control Number for this information collection is 2120-0026. Public reporting for this collection of information is estimated to be approximately 2.5 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, completing and reviewing the collection of information. All responses to this collection of information are required to obtain or retain a benefit per 14 CFR Part 91. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to the FAA at: 800 Independence Ave. SW, Washington, DC 20591, Attn: Information Collection Clearance Officer, ASP-110.

Pre-Flight Pilot Checklist

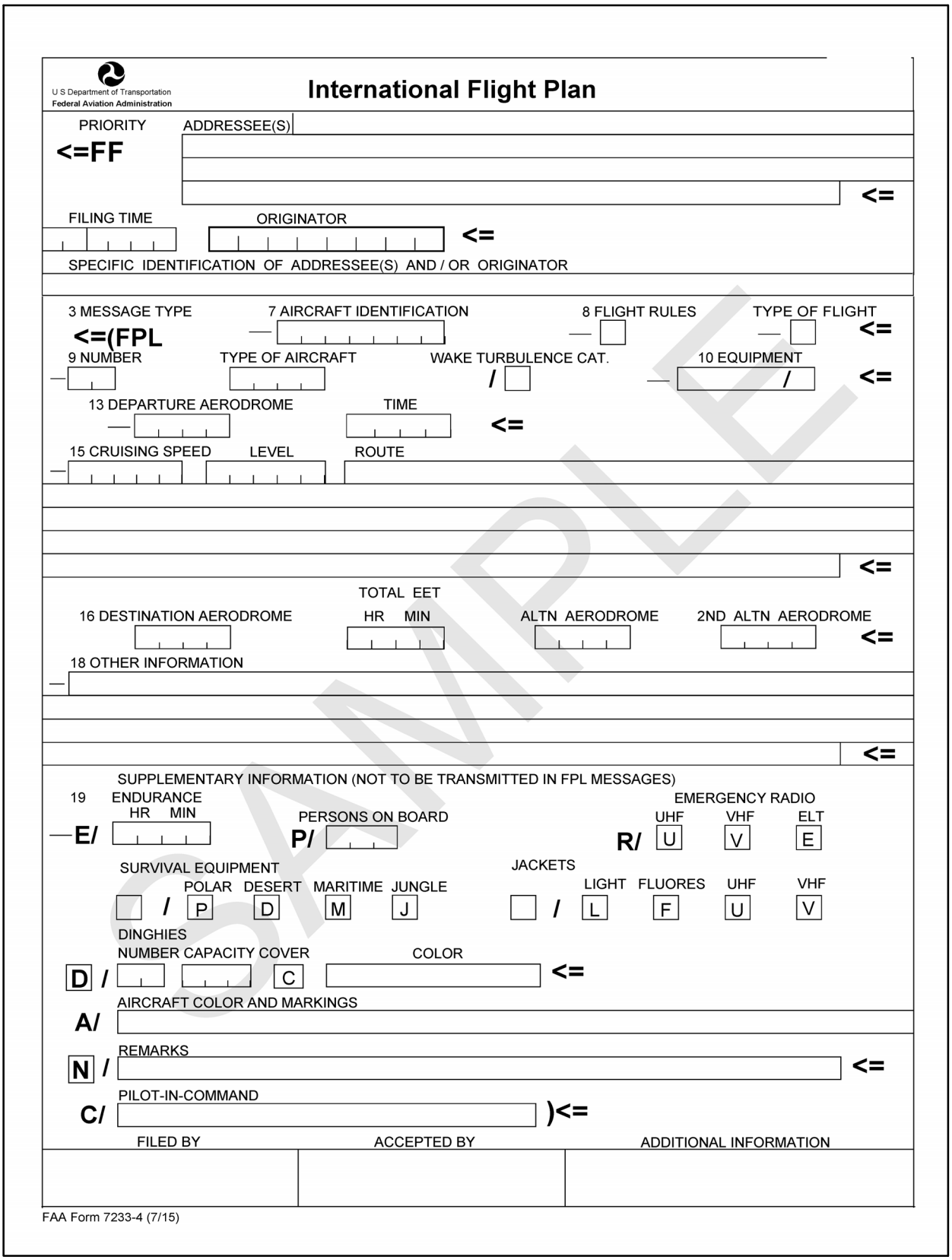
Aircraft Identification | Time of Briefing

			Remarks	Report Weather Conditions Aloft			
Weather (Destination) (Alternate)	☐	Present		*Report immediately weather conditions encountered---particularly cloud tops, upper cloud layers, thunderstorms, ice, turbulence, winds and temperature*			
	☐	Forecast		Position	Altitude	Time	Weather Conditions
Weather (En Route)	☐	Present					
	☐	Forecast					
	☐	Pireps					
Winds Aloft		Best Crzg. Alt.					
Nav. Aid & Comm. Status.	☐	Destination					
	☐	En Route					
Airport Conditions	☐	Destination					
	☐	Alternate					
ADIZ	☐	Airspace Restrictions					

Civil Aircraft Pilots

FAR Part 91 states that each person operating a civil aircraft of U S. registry over the high seas shall comply with Annex 2 to the Convention of International Civil Aviation, International Standards - Rules of the Air. Annex 2 requires the submission of a flight plan containing items 1-1 9 prior to operating any flight across international waters. Failure to file could result in a civil penalty not to exceed $1,000 for each violation (Section 901 of the Federal Aviation Act of 1958, as amended).

International briefing information may not be current or complete. Data should be secured, at the first opportunity, from the country in whose airspace the flight will be conducted.



U S Department of Transportation
Federal Aviation Administration

International Flight Plan

PRIORITY
<=FF

ADDRESSEE(S)

<=

FILING TIME

ORIGINATOR

<=

SPECIFIC IDENTIFICATION OF ADDRESSEE(S) AND / OR ORIGINATOR

3 MESSAGE TYPE
<=(FPL

7 AIRCRAFT IDENTIFICATION

8 FLIGHT RULES

TYPE OF FLIGHT

<=

9 NUMBER

TYPE OF AIRCRAFT

WAKE TURBULENCE CAT.
/

10 EQUIPMENT
/

<=

13 DEPARTURE AERODROME

TIME

<=

15 CRUISING SPEED

LEVEL

ROUTE

<=

16 DESTINATION AERODROME

TOTAL EET
HR MIN

ALTN AERODROME

2ND ALTN AERODROME

<=

18 OTHER INFORMATION

<=

SUPPLEMENTARY INFORMATION (NOT TO BE TRANSMITTED IN FPL MESSAGES)

19
ENDURANCE
HR MIN
E/

PERSONS ON BOARD
P/

EMERGENCY RADIO
R/ UHF [U] VHF [V] ELT [E]

SURVIVAL EQUIPMENT
/ POLAR [P] DESERT [D] MARITIME [M] JUNGLE [J]

JACKETS
/ LIGHT [L] FLUORES [F] UHF [U] VHF [V]

DINGHIES
NUMBER CAPACITY COVER
D / C

COLOR

<=

AIRCRAFT COLOR AND MARKINGS
A/

REMARKS
N /

<=

PILOT-IN-COMMAND
C/

)<=

FILED BY | ACCEPTED BY | ADDITIONAL INFORMATION

FAA Form 7233-4 (7/15)

NOTE–
Current FAA Form 7233–4 available at https://www.faa.gov/forms/.

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