U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

ORDER
8260.19F

National Policy

Effective Date:
01/09/14

SUBJ: Flight Procedures and Airspace

1. This order provides guidance to all FAA personnel for the administration and accomplishment of the FAA Flight Procedures and Airspace Program.

2. The development of effective and efficient flight procedures is closely related to the facility establishment and airport programs. These procedures require active participation by Flight Standards, the applicable Air Traffic Organization Service Area, and office of Airports personnel in the planning, programming, and budgeting of navigation facilities and airport development plans. Instrument procedures often determine the alignment and location of navigation facilities as well as the location, marking, and lighting of airport landing and maneuvering areas. Title 14 Code of Federal Regulations (CFR) Part 95 establishes minimum en route altitude (MEA), minimum reception altitude (MRA), maximum authorized altitude (MAA), minimum obstruction clearance altitude (MOCA), minimum crossing altitude (MCA), and changeover point (COP) are established by the Federal Aviation Administration for instrument flight along Federal airways.

3. Guidelines and procedures that are common to all instrument flight procedures are in chapter 1. Chapters 3 and 4 contain specific guidelines and procedures for en route and terminal instrument flight procedures, respectively. Chapter 5 contains information concerning Airspace - Obstruction Evaluation (OE); Designation of Controlled Airspace; Airport Airspace Analysis; Restricted Areas; and Establishment, Relocation, or Discontinuance of Radio Navigation Aids. Chapter 6 provides information concerning Military Procedures. Chapter 7 contains Planning Standards; Airway, Terminal, and Airport Planning; Safety Analysis; Private Aid, and Facilities and Equipment (F&E) Support. Chapter 8 provides information on Instrument Approach Procedures Data Transmittal Systems as well as the use and preparation of forms.

John Barbagallo

John Barbagallo
Deputy Director, Flight Standards Service

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Chapter 1. General Information

Section 1-1. General

1-1-1. Purpose of This Order. This order provides guidance to all FAA personnel for the administration and accomplishment of the FAA Flight Procedures and Airspace Program.

1-1-2. Audience. The primary audience for this order is the Air Traffic Organization (ATO) Mission Support Services (MSS) and all service providers (see appendix A) who have the responsibility to develop instrument flight procedures. The secondary audience includes all other Air Traffic Organizations, Flight Standards headquarters, and regional office Divisions/Branches who have responsibilities related to instrument flight procedures.

1-1-3. Where You Can Find This Order. You can find this order on the FAA's web site at: https://employees.faa.gov/tools_resources/orders_notices/.

1-1-4. What This Order Cancels. Order 8260.19E, Flight Procedures and Airspace, dated August 25, 2010, is canceled.

1-1-5. Explanation of Changes. Significant areas of new direction, guidance, policy, and criteria as follows:

a. General.

(1) Revised paragraph numbering.

(2) Removed all guidance and references to Microwave Landing System (MLS) and Transponder Landing System (TLS).

(3) Removed all references and guidance regarding the use of Height Above Threshold (HATh) and Threshold Elevation (THRE) documentation due to reverting back to publishing minimums relative to Height Above Touchdown (HAT) and Touchdown Zone Elevation (TDZE).

b. Chapter 1.

(1) Section 1-2 Note. Made editorial changes as recommended by Office of Rulemaking, ARM- 26.

(2) Paragraph 1-2-2d. Added "and human-in-the-loop analysis" to first sentence and made some editorial changes.

(3) Paragraph 1-2-2e. Replaced "safety" with "levels of risk probabilities" and added: "This branch also develops Flight Systems Laboratory tools software applications (RNAV-Pro, RDVA-Pro, and the Engine Out Surface Evaluator [EOSE]) for use in RNAV/RNP procedure design and implementation."

(4) Paragraph 1-2-4a. Updated Technical Operations Flight Inspection Services (AJW-3) responsibilities and removed last sentence; AJW-3 does not chair the National Airspace and Procedures Team (NAPT).

(5) Paragraph 1-2-5a(1). At the request of the National Flight Data Center (NFDC), added reference to AIRNAV database.

(6) Paragraph 1-2-5b(14). Moved NFDC responsibilities for Transmittal Letter development to AeroNav Products.

(7) Section 1-3. Added a Note to explain that all the responsibilities identified in this section are for information only and are there to assist procedure developers in knowing whom to contact for information in the performance of their duties.

(8) Paragraph 1-3-4. Added responsibility for Shared Service Organization (ATO-AIT). Added hyperlink to access standards for data resolution requirements which resolved NavLean Recommendation #9. Paragraphs re-numbered.

c. Chapter 2.

(1) Paragraph 2-1-1a. Changed directive reference to proper source and added guidance to inform the audience that information on the lifecycle of an Instrument Flight Procedure (IFP) can be found in appendix O.

(2) Paragraph 2-4-3d. Deleted last sentence; guidance already exists in Order JW-3 8200.6, paragraph 6c.

(3) Paragraph 2-5-1a. Added more background information regarding magnetic variation pertaining to area navigation (RNAV) procedures at the request of the FAA Aircraft Certification Division.

(4) Paragraph 2-5-1a Note. Revised with expanded text provided by Aircraft Certifications' Avionics Systems Branch, AIR-130.

(5) Paragraph 2-5-2a(12)(a). Inserted clarification as recommended by the Performance based operations Rulemaking Committee (PARC) recommendations (Memo dated June 17, 2013) regarding magnetic variation applications.

(6) Paragraph 2-5-3a. Inserted suggested guidance as recommended by the Performance based operations Rulemaking Committee (PARC) recommendations (Memo dated June 17, 2013) regarding magnetic variation applications.

(7) Paragraph 2-5-3a Notes 1 and 2. Added notes as recommended by the Performance based operations Rulemaking Committee (PARC) recommendations (Memo dated June 17, 2013) regarding magnetic variation applications.

(8) Paragraph 2-5-3f(2). Clarified magnetic variation information for RNAV instrument procedures.

(9) Paragraph 2-6-2. Updated office responsible for the U.S. Notices to Airmen (NOTAM) System.

(10) Paragraph 2-6-2a. Editorial updates.

(11) Paragraph 2-6-3a. Explained what “EST” means.

(12) Paragraph 2-6-3b. Explained what “PERM” means.

(13) Paragraph 2-6-3b(6). Removed NFDC due to Transmittal Letter responsibility changes.

(14) Paragraph 2-6-3b(8). Added paragraph to indicate P-NOTAMs must be canceled when procedural change has been published.

(15) Paragraph 2-6-4. Minor editorial corrections throughout paragraph.

(16) Paragraph 2-6-4b. Added guidance to state that all times are Coordinated Universal Time (UTC).

(17) Paragraph 2-6-4c. Add “non-FAA” to “Service Provider.”

(18) Paragraph 2-6-4g. Updated NFDC responsibilities.

(19) Paragraph 2-6-5a. Added “or the non-FAA service provider” to first sentence.

(20) Paragraph 2-6-5b. Removed reference to Order 8260.3, U.S. Standard for Terminal Instrument Procedures (TERPS) paragraph that addressed NOTAMS; paragraph is being removed from Order 8260.3 with Change 26.

(21) Paragraph 2-6-5c Example. Editorial change made for clarity.

(22) Paragraph 2-6-7e. Editorial change made for clarity.

(23) Paragraph 2-6-8e. Inserted “224-day” reference to reiterate the required time limit.

(24) Paragraph 2-7-1d. Revised for clarity.

(25) Paragraph 2-7-2. Changed “AeroNav Products” to “non-FAA service provider.”

(26) Paragraph 2-8-1a. At the request of AeroNav Products, reference to the Procedure Tracking System (PTS) has been removed. Where this information is documented is left to the discretion of AeroNav Products.

(27) Paragraph 2-10-4a(2). At the request of the ATO, defined what is meant by “maintaining.”

(28) Paragraph 2-10-4a(6). Added “cancelations” to second sentence.

(29) Paragraph 2-10-4b. Added guidance regarding establishing Waypoints for RNAV procedures that appear on En Route Charts and are solely there to support the RNAV procedure. Also added guidance for when ATC needs to amend “Fix Use” to support ATC requirements.

(30) Paragraph 2-11-4c. Added exception to not apply horizontal and vertical accuracy values in the visual portion of final segment nor when evaluating the Glideslope Qualification Surface (GQS).

(31) Paragraph 2-11-4d. In order to eliminate any possible confusion on whether the exception to not apply horizontal and vertical accuracy values in the visual portion of final segment nor when evaluating the GQS also applied to required navigation performance (RNP) procedures; it is restated in this paragraph.

(32) Paragraph 2-11-5. Added exception to applying adverse assumption obstacle (AAO).

(33) Paragraph 2-11-5b & c. Revised “Exception” language to show that only the “obstacle” database that contains all surveyed information will be used and that terrain databases can be inhibited inside the surveyed areas.

(34) Paragraph 2-11-6b. Added guidance on datum substitution as specified in AFS-400 Memorandum, dated March 1, 2013, subject: “Clarification to Order 8260.58, United States Standard for Performance Based Navigation (PBN) Instrument Procedure Design.”

(35) Paragraph 2-12-1. Added guidance to permit AFS-400 to determine if a waiver is not necessary for a deviation to policy and authorize the deviation using the Flight Standards approval process.

(36) Paragraph 2-12-2g. Deleted NFDC.

(37) Paragraph 2-12-4a. Revised first sentence upon recommendation from ATO.

d. Chapter 4.

(1) Paragraph 4-1-3d(2). Editorial for clarity, showing that the procedure turn area includes all types.

(2) Paragraph 4-1-6e(3). Revised to show lateral navigation (LNAV) criteria will be used for development of RNAV sidestep minima.

(3) Paragraph 4-6-2. Changed “verify” to “ensure” in several placed for language consistency.

(4) Paragraph 4-7-2. Changed “must” to “should” to make it a recommended option for RNAV procedures to be connected to the en route system.

(5) Paragraph 4-7-2a(5). Added option to use a standard terminal arrival route (STAR) terminating at an instrument approach fix (IAF) or IAF/IF or any point prior to the precision final approach fix (PFAF).

(6) Paragraph 4-7-2e Note. Revised text for clarity.

(7) Paragraph 4-7-6c. Revised text per Flight Inspection Services request to allow "FAS Data Block" coordinates to be other than World Geodetic System of 1984 (WGS-84) as long as the coordinates are the same as the ground survey data.

e. Chapter 5.

(1) Section 5-1. Removed portions that pertained to the responsibilities of the Obstruction Evaluation (OE) Group, AJV-15. Those responsibilities will be incorporated into Order JO 7400.2, Procedures for Handling Airspace Matters. Revised remaining text to provide basic guidance regarding OEs and geared for use by IFP developers.

(2) Paragraph 5-2-1a. Add reference to Terminal Arrival Areas (TAAs) must be contained within controlled airspace.

(3) Removed all formulas and examples incorporated into figures, placing them in the applicable paragraphs for easier reading.

f. Chapter 7.

(1) Paragraph 7-7-1a. Added reference to Office of Airports.

(2) Paragraph 7-1-1d. Added guidance to consider plume emitting devices and their effects on aircraft when designing instrument flight procedures.

(3) Paragraph 7-6-1b. Editorial changes per request of the Office of Airports.

g. Chapter 8.

(1) Paragraph 8-2-2c. Added SA CAT I and SA CAT II, as well as CAT II and CAT III procedures being combined on the same chart.

(2) Paragraph 8-2-5g Examples. Revised method used to describe NoPT arrivals over a navigational aid (NAVAID) facility per resolution agreed upon at the Aeronautical Charting Forum – Instrument Procedures Group, and addressed in Recommendation number 11-02-297, Airway "NoPT" Notes on Instrument Approaches.

(3) Paragraph 8-2-6d. Revised text at the request of Mission Support Services, AeroNav Products, AJV-3B, to support new FAA Form processing capabilities.

(4) Paragraph 8-3-2c. Deleted "Proposed Date" as an option per agreement reached at a meeting with AeroNav Products and the National Flight Data Center, which was held on

August 16, 2013 to discuss updating Order 8260.26, Establishing and Scheduling Civil Public-Use Standard Instrument Procedure Effective Dates.

(5) Paragraph 8-3-2e(1). Deleted reference to "Proposed Date."

(6) Paragraph 8-3-3b. Added clarification for processing and new guidance on what to place in the "Additional Flight Data Block" when an Amendment is necessary after an instrument has been suspended and is being reinstituted.

(7) Paragraph 8-3-4. Note added to give flexibility when it is deemed necessary to cancel and reissue IFPs for reasons other than what is listed.

(8) Paragraph 8-3-5. Revised to change NFDC responsibilities to AeroNav Products responsibility.

(9) Paragraph 8-4-1f. Revised requirement to be more informative on alternatives considered prior to requesting a waiver and why those alternatives are not feasible. Additionally, Form 8260-1, Flight Procedures Standards Waiver, revised to support this change.

(10) Paragraph 8-4-1i and figure 8-4-1. Conversion of Form 8260-1 to a "report format" permitted the elimination of the "Continuation" portion of the Form. Paragraph letter sequence adjusted accordingly.

(11) Paragraph 8-5-2g Notes 1 & 2. Revised for clarity and added a pointer to another paragraph when an Office of Primary Responsibility (OPR) change might be needed.

(12) Paragraph 8-6-3b(1). Changed example "R-355" to R-180" for a more realistic portrayal.

(13) Paragraph 8-6-3c2(b). Updated example and deleted "by AeroNav Products" from the Note; this is the responsibility of all procedure developers not just AeroNav Products.

(14) Paragraph 8-6-5k(5). Clarified that the runway visual range (RVR) value will be derived from a checklist provided.

(15) Paragraph 8-6-5k(6). Added guidance to place a chart note indicating procedure not authorized when the control tower is closed.

(16) Paragraph 8-6-5m(2)(a). Add example of when this chart note would be used.

(17) Paragraph 8-6-5m(2)(g)&(h). Revised chart notes that restrict night operations in response to Aeronautical Charting Forum-Instrument Procedures Group Agenda Item: 09-02-291, Straight-in Minimums NA at Night.

(18) Paragraph 8-6-5m(6). At the request of AFS-470, revised Global Navigation Satellite System Landing System (GLS) restriction chart note to read: "Autopilot coupled approach NA below (decision Altitude)" and removed "GLS" from profile chart note.

(19) Paragraph 8-6-5m(6)(d). Added “Autopilot coupled approach NA.”

(20) Paragraph 8-6-5m(7)(c). Added guidance to support Order JO 7110.308, 1.5-Nautical Mile Dependent Approaches to Parallel Runways Spaced Less Than 2,500 Feet Apart, operations. Adjusted letter sequence and added note to ensure the chart notes are documented in a specific sequence.

(21) Paragraph 8-6-5m(7)(e). Added GLS.

(22) Paragraph 8-6-6b. Added clarification text and example of a note that would construe regulating traffic and not be acceptable as a chart note.

(23) Paragraph 8-6-6h(5). Added text for clarity.

(24) Paragraph 8-6-6n. Note added to prevent numerical values and that chart producers will obtain the information from the applicable source.

(25) Paragraph 8-6-7g. Removed “or as directed by ATC” as part of Missed Approach instructions and clarified guidance.

(26) Paragraph 8-6-8h. Converted “Note” into two separate paragraphs to show that computing offset for conventional procedures is different for RNAV (GPS) and RNP procedures.

(27) Paragraph 8-6-9b(1). Revised last sentence to change from stating “Various Heliports” to using a “primary heliport” and list all heliports in the “Additional Flight Data Block”.

(28) Paragraph 8-6-9d(4). Removed reverence to a specific type of procedure, thus allowing for additional procedure types to be applied as they become authorized.

(29) Paragraph 8-6-9d(5). Added guidance to support “Converging” instrument procedures.

(30) Paragraph 8-6-9f. Revised to change NFDC responsibilities to AeroNav Products responsibility.

(31) Paragraph 8-7-1b(12). Revised paragraph to remove reference to “PDA” that is no longer used and made editorial corrections at the request of AeroNav Products, AJV-3B.

(32) Paragraph 8-7-1b(20) Examples. Reinserted data unintentionally omitted in previous version of this order.

(33) Paragraph 8-7-1c(10) Example. Removed reference to “ISA LOW” and “ISA HIGH” in the “Critical Temperatures” box.

(34) Section 8-9. Added this section with material extracted from Order 8260.58, United States Standard for Performance Based Navigation (PBN) Instrument Procedure Design, regarding documentation of Terminal Arrival Areas.

(35) Paragraph 8-10-1. Expanded guidance to reference 14 CFR Part 71.

(36) Paragraph 8-10-1c(1). Changed "semi-annually" to annually and added reference to 14 CFR Part 95 IFR altitudes.

h. Appendix A.

(1) Updated acronyms and abbreviations.

(2) Revised table A-2, for Form name 8260-7B to read "Special Instrument Procedure Authorization."

i. Appendix B. Updated references.

j. Appendix C. Paragraph 2b(1). Revised Department of Commerce accuracies according to input received from the ATO Mission Support Services, Geographic Services Group, Terrain and Obstacle Data Team.

k. Appendix D. Added guidance to Block 7 to allow for "No Change" to be annotated when there is no change to the fix itself.

l. Appendix I. Revised Form 8260-7B title.

m. Appendix J. Made corrections to all Form 8260-9, Standard Instrument Approach Procedure Data Record, examples, removing "ISA LOW" and "ISA HIGH" where applicable.

n. Appendix L.

(1) Paragraph 4h. Changed "Tech Ops" to "Spectrum Engineering."

(2) Paragraph 4i. Changed RPI information pertaining to GBAS operations.

(3) Paragraph 4q(1)-(4). Expanded guidance for when a Vertical Descent Angle (VDA) is used for an LP procedure.

(4) Paragraph 4r. Corrected guidance and example regarding establishing course width at threshold values.

o. Appendix O. Per NavLean Recommendation #19, added this appendix to show the basic, start to finish, process for an Instrument Flight Procedure, referred to as the IFP Lifecycle.

1-1-6. Effective Date. This order and subsequent changes are effective on the dates shown in the upper left corner of each page. Implementation of changes must commence no later than 24 months from the published effective date. Previous editions may be used until implementation has commenced, not to exceed 24 months from the new effective date.

Section 1-2. Responsibilities

Note: Applicable FAA 1100-series orders address organizational responsibilities and functions. Responsibilities specified in this section are provided for information only and for the purpose of assisting instrument procedure developers in knowing whom to contact for assistance and/or information in the performance of their duties. Do not interpret this section as a substitute or supplement to any other FAA directive.

1-2-1. Flight Standards Service (AFS-1).

a. Flight Standards Service is responsible for the use of air navigation facilities, appliances, and systems by aircraft operating in established environments and the National Airspace System (NAS). Responsibility includes governing policy and oversight of manual and automated development and maintenance of terminal and en route flight procedures. The director has final authority to issue, amend, and terminate rules and regulations relating to instrument procedures, minimum en route altitudes, flight procedures, operational weather minimums, and minimum equipment requirements.

b. Responsibility for the overall management of the Flight Procedures and Airspace Program is vested in the Flight Technologies and Procedures Division (AFS-400). This order is primarily concerned with those offices having direct responsibility for the accomplishment of the Flight Procedures and Airspace Program. The following is a brief description of their activities.

1-2-2. Flight Technologies and Procedures Division (AFS-400).

a. This division is the principal element of the Flight Standards Service governing policies, criteria, and standards for establishing and maintaining terminal and en route flight procedures; for using air navigation facilities, appliances, and systems; and for validation of FAA instrument procedure design software. This office is designated as the final authority to issue, amend, and appeal minimum en route instrument flight rules (IFR) altitudes and associated flight data under Title 14, Code of Federal Regulations (14 CFR) Part 95 and standard instrument approach procedures under 14 CFR Part 97. The division is also responsible for approval/ disapproval of special instrument approach procedures and requests for waivers of standards.

b. The Flight Operations Branch (AFS-410) is the principal element of the division with respect to concepts, policies, systems, and programs associated with the operational and flight technical aspects of all weather operations. It develops concepts for design, evaluation, and approval of Category (CAT) I, II, and III approach and landing operations, as well as lower than standard takeoff minimums. Develops instrument flight operational concepts, policies, standards, criteria, requirements, specifications, and limitations for new and existing aircraft (all categories) and new and existing airborne, ground-based and space-based systems used in instrument flight operations, and develops and issues Form 8260-7B, Special Instrument Procedure Authorization, as required, through the Procedures Review Board (PRB). Provides technical representation to International Civil Aviation Organization (ICAO) on matters related to instrument flight operations, and maintains liaison with foreign civil aviation operational and technical authorities to encourage the acceptance of United States instrument flight operations standards and to foster standards with a level of safety consonant with those of the United States.

c. The Flight Procedure Standards Branch (AFS-420) is the principal element within the division, with respect to the rulemaking process of the flight procedures program; also with respect to the development, application, and oversight of national policies and directives for the administration of the national flight procedures program; and development of criteria pertinent to the design of instrument flight procedures. This branch serves as the focal point within Flight Standards for all matters relating to airspace, cartographic programs, instrument flight procedure (IFP) Notices to Airmen (NOTAMs), and is the primary interface for industry on matters relating to instrument procedures criteria. The branch assists the Flight Procedure Implementation and Oversight Branch (AFS-460), providing technical advice and assistance to other FAA elements, government agencies, and industry on the interpretation and application of criteria. It analyzes and evaluates execution of flight procedure programs within the FAA to determine compliance with National policy.

d. The Flight Operations Simulation Branch (AFS-440) is the principal element within the division which provides simulation and human-in-the-loop analysis of new, emerging, or modified Communications, Navigation, and Surveillance (CNS) technologies and procedures in support of flight safety. This simulation and analysis is accomplished through computer modeling, human-in-the-loop observation in flight and air traffic control (ATC) simulators, and/or industry aircraft. This branch manages the Flight Operations Simulation Laboratory comprised of flight simulators and ATC controller stations that can be linked to provide real time pilot/controller interface and data collection to meet the safety studies' and risk analyses' data requirements. These simulations are used to support AFS offices, Air Traffic Organization (ATO), airports, regions, the aviation industry, and FAA executives who seek objective and subjective human factors safety analysis and assessments to enhance flight operations, standards, capacity, and aviation safety within the NAS and international organizations such as International Civil Aviation Organization (ICAO).

e. The Flight Systems Laboratory (AFS-450) is the principal element within the division that analyzes and quantifies the levels of risk probabilities associated with the implementation of new, emerging, and modified flight operational concepts and navigation systems. This branch conducts safety studies for client-proposed changes to the NAS or international standards for other AFS offices, ATO, airports, regions, the aviation industry, and FAA executives who seek objective safety assessments to improve flight operations, standards, capacity, aviation safety within the NAS, and international organizations such as ICAO. This branch also develops Flight Systems Laboratory tools software applications (RNAV-Pro, RDVA-Pro, and the Engine Out Surface Evaluator [EOSE]) for use in RNAV/RNP procedure design and implementation.

f. The Flight Procedure Implementation and Oversight Branch (AFS-460) is the principal element within the division, with respect to FAA Instrument Flight Procedures and Flight Inspection policy oversight. This branch develops policy and provides oversight of the IFP development process for government and non-FAA service providers. This oversight includes clarifying procedure criteria, confirming procedure development data, conducting simulator evaluations, and monitoring validation flights. AFS-460 develops policy for flight validation of IFPs and manages the program for the review and approval of all Special IFP and Waivers to design criteria and standards. AFS-460 is responsible for coordinating non-government procedure developer NOTAM authority and access to the NOTAM Entry System (NES) with

ATO Mission Support Services, Aeronautical Information Management (AIM) Office. This branch develops standards to ensure the orderly processing of all approved IFPs and evaluates the implementation of these standards and practices to determine compliance with established policy. In addition to flight procedure oversight, AFS-460 works with other government agencies, the military, aviation industry leaders, and the international community to improve aviation safety by assisting in the IFP development process worldwide.

g. The Performance Based Navigation Branch (AFS-470) is the principal element within the division, with respect to performance based navigation across all domains. Develops performance based navigation concepts, policies, standards, criteria, requirements, specifications, and limitations for new aircraft and new and existing airborne, ground-based and space-based systems used in instrument flight operations. Develops and issues Form 8260-7B, as required. In coordination with original equipment manufacturers, AIR, and AEGs, identifies and enunciates explicit operating procedures for pilots using new-technology products. Provides guidance to develop Operations Specification (OpsSpec) requirements (including Parts C and H) related performance based navigation, operating minimums, equipment, and training. Responsible for developing concepts, programs, and system requirements necessary to implement performance based navigation and procedures necessary to implement futuristic communications and surveillance capabilities for oceanic, remote area, domestic en route, and terminal area operations, and for nonprecision and precision instrument approaches.

1-2-3. Regional Flight Standards Divisions (AXX-200).

a. The Regional Flight Standards Divisions (RFSD) manages and directs the geographic regions' air carrier, general aviation, and all weather operations programs. Each RFSD provides the regional implementation of national concepts, policies, standards, systems, procedures, and programs with respect to the operational and flight technical aspects of the all weather operations program. The RFSDs' NextGen Branches (RNGB) are assigned specific task processes and derive their guidance for determining appropriate signature level and task responsibilities as specified by their Job Task Analysis.

b. The RNGB responsibilities include but are not limited to the following:

(1) Establishing regional requirements for and managing distribution of, special instrument approach procedures. Receiving and resolving user/industry comments on new and revised special instrument approach procedures. Supporting national programs under the direction of AFS-400 such as the Required Navigation Performance/Authorization Required (RNP/AR) instrument approach procedure (IAP) program.

(2) Providing technical evaluations in support of regional airspace programs to determine the effect on operational safety and visual flight operations. Specific study responsibilities for RFSDs are specified in Order 7400.2, Procedures for Handling Airspace Matters, and dictate involvement in a broad range of technical evaluations (i.e., determining feasibility for CAT II/III operations utilizing RNGB missed approach tool, assessing operational safety for taxiway/runway separation, and configuration relative to a proposed CAT II/III, etc.).

(3) Coordinating the RNGB portion of assigned foreign instrument approach procedures programs as specified in Order 8260.31, Foreign Terminal Instrument Procedures (FTIPs).

(4) Approving for the RFSD each CAT II and III operation and coordinating continuity of service assurance with the ATO Service Area. Related to CAT III approvals is the RFSD focal point for coordinating inter-service Surface Movement Guidance Control System (SMGCS) activities, site inspections, and the approval of the associated SMGCS plan and periodic reviews.

(5) Providing the operational input on matters related to regional capacity studies and airport operational safety initiatives.

(6) Performing Obstruction Evaluation and Airport/Airspace Analysis (OE/AAA) evaluations to address the effect of obstacles on visual flight operations and instrument flight operations (e.g., OE studies) relative to AAA studies, assess operational safety and safety of persons and property on the ground in coordination with the Airports Division, as necessary.

(7) Providing the consolidated RFSD position for review of charted visual flight procedures and area navigation (RNAV) visual flight procedures.

(8) Coordinating with Airports Division in the approval or denial of modifications airport standards, providing written safety assessment of end-around taxiway (EAT) proposals/use and declared distance concepts (see Order 7400.2).

(9) Providing operational review and comments for Air Traffic Technical Operations Service Area's submission of a NAS Change Proposal (NCP), evaluation of new ATC Towers and similar ATO projects. This activity includes participation in the associated Safety Risk Management Document (SRMD) analysis and acceptance processes.

(10) When requested by the Flight Procedures Field Office (FPFO), assists in developing the equivalent level of safety for an AeroNav Products originated procedures waiver.

(11) In coordination with AFS-460, participates in and provides region level support when requested for activities related to non-FAA Service Providers.

1-2-4. Technical Operations Flight Inspection Services (AJW-3).

a. AJW-3 is the principal element within the Technical Operations Services (AJW-0) directly responsible for the in-flight inspection of air navigation facilities throughout the United States and its territories. It is responsible for input to the Air Traffic Technical Operations Service Areas Facilities and Equipment (F&E) budget submission with respect to terminal air navigation aids (other than radar) and visual approach aids.

b. Flight Program Services Group (FPSG) is the AJW-3 element responsible for flight inspection of navigation aids and flight procedures in support of the NAS. The group initiates and completes investigative remedial action with respect to any deficiency or reported hazard, including restrictions or emergency revisions to procedures. It maintains liaison with AeroNav Products, as well as other FAA offices, civil and military interests, to ensure consideration of all requirements relating to the procedural use of navigation facilities. It maintains a suitable record system reflecting the status of each flight procedure with required supporting data.

1-2-5. Air Traffic Organization, Mission Support Services (AJV-0).

a. Aeronautical Information Management Office (AJV-2) is directly responsible for managing the agency's program to provide aeronautical information services to ensure the flow of information necessary for safety, regularity, and efficiency of air navigation. This office is charged with the responsibility for collecting, collating, validating, maintaining, and disseminating aeronautical data regarding the United States and its territories. It is also a source for technical assistance to the Aeronautical Navigation Products Office (AeroNav Products), AJV-3 regarding database accuracy standards, content, and format.

(1) The National Flight Data Center, (NFDC), is the principal element within AJV-2 with respect to maintaining the National Airspace System Resources (NASR) database and for disseminating information relating to the NAS. NFDC is also responsible for maintaining proposed data within the AIRNAV database for the development of instrument flight procedures. NFDC responsibilities include but are not limited to:

(a) Publishing the daily National Flight Data Digest (NFDD) and 56-day subscriber files to promulgate additions, changes, and deletions to non-regulatory elements of the NAS. Respective changes are also published in Order JO 7340.2, Contractions, and Order JO 7350.8, Location Identifiers.

(b) Conducting pre-publication review of aeronautical data contained in standard instrument approach and departure procedures, standard terminal arrivals, standard instrument departures, military training routes, navigational aids, airport data, and airspace changes submitted for action, and to identify and correct items in non-conformance with applicable directives.

(c) Validating submitted data with the NASR Database and resolving contradictions.

(d) Managing the development and assignment of five-letter fix names and navigational aid (NAVAID)/airport identifiers.

(e) Issuing, on a predetermined schedule, amendments to 14 CFR Part 95.

(f) Maintaining copies of 8260- and 7100-series forms that support public use standard instrument approach procedures (SIAPs), fixes, airways, standard terminal arrival routes (STARs), and departure procedures (DPs).

(2) The Geographic Services Group is the principal element within AJV-2 responsible for developing, directing, and recommending national policy and criteria for aeronautical information. This group serves as the Mission Support Services focal point for developing and managing Geographic Information Systems for the NAS. Geographic Services is also responsible for collecting, validating, and maintaining obstacle data to support instrument flight procedure development including minimum vectoring altitude (MVA) and minimum IFR altitude (MIA)

charts as well as minimum safe altitude warning (MSAW) data creation. Responsibilities include but are not limited to:

(a) Establishing the U.S. position for AIM and Aeronautical Information Services through the ICAO.

(b) Collecting, validating, managing, and disseminating as-built obstacle data reported under 14 CFR Part 77.

1. Providing the publically-available Digital Obstacle File (DOF), which contains a record of all as-built man-made obstructions that effect domestic aeronautical charting products.

2. Providing Obstacle Repository System (ORS) data to other FAA offices on a timely basis.

(c) Verifying source data for as-built obstacles and assigning accuracy codes that reflect the reliability of the reported obstacle's vertical height and horizontal position.

(d) Managing the verification/validation of airport survey safety critical data.

(e) Managing the requirements and technology for Telephony, NASR, AIRNAV, Airport GIS, TPSS, AMDB, and the Airspace Design and Analysis Center (SDAT, TFR, SAA, Controlled) databases and infrastructure.

b. Aeronautical Navigation Products (AeroNav Products) (AJV-3) is the FAA element responsible for the development, maintenance, quality assurance, and technical approval of public-use flight procedures, production, and distribution of aeronautical charts and related publications and products. Responsibilities include but are not limited to the following:

(1) Development, publication, and maintenance of SIAPs.

(2) Development, publication, and maintenance of Obstacle Departure Procedures (ODPs) and Standard Instrument Departure Procedures (SIDs). Development and maintenance of Diverse Vector Areas (DVAs).

(3) Development, publication, and maintenance of Air Traffic Service (ATS) Routes.

(4) Review and publication of STAR Airport Diagrams, and Special Graphics.

(5) Responsible for quality assurance of items produced by AeroNav Products.

(6) Operations support, as requested, for NAS related products.

(7) Selecting and evaluating source data for final chart compilation.

(8) Validating geographical positions, distances, and bearings of items produced by AeroNav Products.

(9) Maintaining liaison with elements of FAA to support safe and accurate portrayal of charting data.

(10) Providing civilian charts in support of military requirements.

(11) Providing international charting support to selected foreign countries.

(12) Establishes procedures to ensure operational data are included in the NASR database.

(13) Analyzing obstruction evaluations to determine the effects on current and planned instrument flight operations, minimums, and/or flight altitudes of all civil, joint-use, and United States Army instrument procedures in accordance with current policy.

(14) Promulgating SIAPs, ODPs, and permanent FDC NOTAMs relating to IFPs with assigned effective dates in a bi-weekly transmittal letter and completing necessary requirements for publication in 14 CFR Part 97.

c. Service Area, Operational Support Group, Flight Procedures Teams (OSG-FPTs), responsibilities include but are not limited to:

(1) Evaluating and responding to industry and user comments relating to instrument procedures.

(2) Serving as Chairperson of the Regional Airspace and Procedures Team (RAPT) under Order 8260.43, Flight Procedure Management Program.

(3) Coordinating requests for new instrument procedures service with the respective Air Traffic Service Area and other concerned offices, and conducting instrument procedures feasibility studies.

(4) Coordinating submission by responsible offices of all pertinent data and supporting documents required for procedures development and assignment of priority when further procedures action is required.

(5) Planning and coordinating new or relocated NAS facilities.

(6) Coordinating with applicable Air Traffic Service Areas to select a charting date consistent with priorities and workload when a component of the NAS is to be commissioned, de-commissioned, or altered.

(7) Coordinating the input for the planning and development of Regional and Air Traffic Service Area F&E budget submissions and programming actions.

(8) Evaluating regional airport and airspace changes for impact on instrument flight procedures.

(9) Determining the necessity for environmental impact studies as required by current policy.

(10) Acting as the focal point for flight inspection issues within the region.

1-2-6. Individual. Personnel working within the Flight Procedures Program are responsible for maintaining professional knowledge in a technical, complex, and specialized field, and for the application of the knowledge to assure safety and practicality in air navigation. Where directives are deficient, each individual must take the initiative to seek an acceptable method of resolution and to inform the responsible office of any recommended change to policy, procedures, etc. that is cost beneficial and/or provides increased operational safety.

1-2-7. Transferring Instrument Procedure Maintenance Responsibilities. Instrument procedures are normally maintained by AeroNav Products; however, special procedures may be maintained by the proponent. The proponent must show that they are capable of meeting all the requirements stipulated in Order 8260.60, Special Instrument Procedures. Procedures currently maintained by the FAA may be released to the proponent for maintenance after the following requirements have been met:

a. Proponent submits a written request to AFS-400 to seek approval to assume maintenance responsibilities from AeroNav Products. This request must indicate how the requirements specified in Order 8260.60 will be met.

b. AFS-400 responds to the proponent with approval or disapproval. If the transfer is approved, the proponent will contact AeroNav Products to address the following:

(1) Establish transfer date.

(2) Inform the RAPT that the maintenance responsibilities for (specified) instrument procedures have been transferred to the proponent.

Note: Include the (maintenance) point-of-contact to ensure all potential correspondence (e.g., OE studies, etc.) from members of the RAPT reaches the proper parties.

(3) Renegotiate reimbursable agreement regarding all required continuing services (e.g., Flight Inspection, etc.).

(4) Coordinate transfer of documentation files to include all applicable 8260-series forms and general correspondence that pertains to the procedure(s).

(5) Inform AFS-460 (Specials Office) that transfer of maintenance responsibilities has been completed.

Section 1-3. Instrument Procedure Development Software Responsibilities

Note: Organizational responsibilities and functions are addressed in applicable 1100-series orders. Responsibilities specified in this section are provided for information only and for the purpose of assisting instrument procedure developers in knowing whom to contact for assistance and/or information in the performance of their duties. This section must not be interpreted as a substitute or supplement to any other FAA directive.

1-3-1. Background.

a. The FAA has developed software to implement the Instrument Flight Procedures Program to include the development, review, storage, and electronic transmittal of instrument flight procedures with ancillary system benefits.

b. The FAA instrument procedure software applies criteria specified in Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS); Order 8260.19, Flight Procedures and Airspace; and other appropriate directives, advisory circulars, software specifications, and CFRs.

1-3-2. Flight Procedure Standards Branch's Responsibility. AFS-420 is the office of primary interest and is responsible for software requirements related to administration of the National Flight Procedures Program and for implementation of criteria pertinent to the design of instrument flight procedures.

1-3-3. Aeronautical Navigation (AeroNav) Products (AJV-3) Responsibility. This is the office of primary interest that is responsible for overall functional management of the FAA instrument procedures software and for ensuring the implementation of AFS-420 defined software requirements.

a. AeroNav Products is responsible for administrative control of instrument procedure software, as well as coordinating actions required to meet changing legal and user requirements. In addition, this group is responsible for:

(1) Carrying out the development of instrument procedure software by coordinating the efforts of users, developers, operators, and contractors associated with instrument procedure software.

(2) Managing and reporting on project schedules, costs, and other supporting resources for the Air Traffic Technical Operations Service Information Resource Manager.

(3) Establishing and maintaining a positive change control management system through the developmental and implementation phases to assure that the completed project (the operational instrument procedure software) meets the requirements of the system definition.

(4) Determining that all proposed changes are essential to the development task and are coordinated among all prospective users of the system.

(5) Keeping contracting officers advised, if appropriate, on proposed changes in order that the officer may be alerted to the impact that they may have on current or proposed contractual actions.

(6) Preparing for and participating in validation tests and evaluations of the information system.

(7) Assuring system software is in conformance with established software requirements.

b. Production Technology and ATC Products Group (AJV-36) is responsible for assuring the successful ongoing operation of the data system. In the performance of these responsibilities, the team must:

(1) Establish and maintain a positive change control management system to assure that all changes to the operational instrument procedure software system are cost effective and are coordinated among all parties who use the FAA instrument procedure software.

(2) Develop necessary guidelines for the control and dissemination of data from the FAA instrument procedure software and other assigned systems.

(3) Authorize release of data in special cases where guidelines are not available.

(4) Provide for coordination in data systems where several program elements share primary operational interest.

(5) Establish priorities for task assignments, scheduling, and utilization of personnel and physical resources.

(6) Assure system configuration, documentation, and reliability.

(7) Conduct extensive operational testing and debugging, to assure system software is in conformance with Order 8260.3 and other appropriate directives, advisory circulars, and 14 CFR provisions. Conduct final system certification of software before release to users through coordination with AFS-420.

(8) Review national user requirements and approve system modifications.

(9) Ensure that the provisions of Order 1370.82, Information Systems Security Program, are compiled within the security control of computer programs and associated documentation.

c. Aeronautical Information Management Office (AJV-2) is responsible for establishing and maintaining the AIRNAV database in support of instrument procedure software requirements.

1-3-4. Information Technology Shared Service Organization (AIT) is responsible for establishing and maintaining the FAA Enterprise Data Architecture. The FAA Enterprise Data Architecture is the Authoritative Source for recording approved designated data sources, responsible stewardship (stewards, custodians, etc.), and any required data precision/resolution. Standards for data precision/resolution required for the development, storage, and electronic transmittal of instrument flight procedures are specified in the FAA Enterprise Data Architecture website at:
http://ea.faa.gov/DataAndInformation/airTransportInfrastructure/documents/ifpDataPrecisionResolutionRequirements.html

1-3-5. Office of Information Services (AMI-1). The Office of Information Services, AMI-1, is responsible for the software development from its inception through implementation. This office is also responsible for maintenance of system software, and must provide and control automatic data processing (ADP) resources that include:

a. The utilization of personnel (including contract personnel) and physical resources.

b. Providing technical consultation and advice as required.

c. Providing telecommunications support, and other necessary ADP enhancement and support services for instrument procedure software.

d. Participating in the review of site preparation, installation, and testing support as required.

e. Providing on-site hardware and software installation and testing support as required.

f. Providing preliminary testing of software to assure conformance with established software requirements.

1-3-6. Office of Assistant Administrator for Information Services (AIO-1). The Office of Assistant Administrator for Information Services, AIO-1, will develop governing policies and responsibilities for ADP program management in accordance with Order 1370.52, Information Resources Policy.

1-3-7. Vice President for Mission Support Services (AJV-0). The Vice President for Mission Support Services is responsible for the determination of agency-wide priorities for use and control of telecommunications resources needed to support FAA instrument procedure software. This responsibility is administered through the Telecommunications Integrated Product Team in the NAS Operations Program (AOP) of the Air Traffic Organization, Technical Operations.

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Chapter 2. General Procedures

Section 2-1. General

Note: This chapter provides guidelines and procedures that are common to all instrument flight procedures. Specific guidelines and procedures for en route and terminal instrument flight procedures are contained in chapters 3 and 4, respectively.

2-1-1. Requests for Public-Use Instrument Flight Procedures (IFPs).

a. Requests for approval and/or establishment of instrument flight procedures may originate from many different sources. See Order 8260.43, Flight Procedures Management Program. It may be a request from a state, city, airport manager, or an individual. It may also be from an air carrier, air taxi, military, commercial operator, Air Traffic Control (ATC), or Flight Standards Service (AFS) personnel. General information on the lifecycle process associated with IFPs can be found in appendix O.

b. Requirements for approval of instrument approach procedures are contained in Order 8260.3, U.S. Standard for Terminal Instrument Procedures (TERPS), Volume 1, chapter 1.

c. Procedures with specific effective dates, and other urgent projects, will be assigned priorities by AeroNav Products. All other projects will be processed as workload permits, by AeroNav Products in order of receipt.

2-1-2. Air Traffic Letters of Agreement. When letters of agreement affect or include flight procedures, they must be coordinated between ATC facilities and AeroNav Products.

a. When these letters are received, AeroNav Products must review them to ensure compatibility with published or planned flight procedures.

b. Copies of letters of agreement received in AeroNav Products must be made a part of the procedure files, to serve as a reference when developing or amending flight procedures.

c. When the terms of the letters of agreement and flight procedures are not compatible, or if it is determined that the terms do not comply with criteria, AeroNav Products must return the letters to the ATC facility with a memorandum that explains the findings. When appropriate and practical, consideration should be given to adjusting the procedures to accommodate the terms of the agreement.

d. Normally, a letter of agreement is an agreement between two or more ATC facilities. Unless AeroNav Products is a party to the agreement, it is not a signatory and does not approve or disapprove the agreement.

2-1-3. Airport Lighting and Visual Aids.

a. Operation of airport lighting and visual aids is contained in the following orders:

(1) JO 7110.10, Flight Services.

(2) JO 7110.65, Air Traffic Control.

(3) JO 7210.3, Facility Operation and Administration.

b. Installation criteria are contained in Order 6850.2, Visual Guidance Lighting Systems.

c. Refer to appendix B, Flight Procedures References, for other applicable orders and advisory circulars.

Section 2-2. Aeronautical Charts

2-2-1. Use of Maps and Charts.

a. AeroNav Products should maintain an adequate supply of current charts, or electronic equivalent, to support the development of instrument procedures within its area of responsibility. For manual application, the largest scale charts available should be used to develop final, circling, and the first part of the missed approach segment. For precision approach procedures, the Airport Obstruction Chart (OC) or an equivalent plan and profile chart is recommended for use. For all approach procedures, the 7 1/2 and 15-minute quadrangle topographic charts (Quads) produced by the United States Geological Survey provide an excellent source for determining terrain elevation. For efficiency in procedure design and flight inspection, 1:100,000 scale planimetric/topographical (topo) charts are also authorized. Use other data sources such as Digital Obstruction File (DOF), AIRNAV database, AeroNav Products Weekly Obstacle Memo, Digital Terrain Elevation Data (DTED), Digital Elevation Model (DEM), etc., in addition to on-site obstacle assessment evaluations, where necessary. The Sectional Aeronautical Chart (scale 1:500,000) and the visual flight rules (VFR) Terminal Area Chart (scale 1:250,000) are good supporting source documents; however, they may not depict all current information because of the extended charting cycle.

b. Charting requirements for inclusion in a flight inspection package should be determined from the Flight Inspection Policy Team [see Order 8200.1, United States Standard Flight Inspection Manual].

2-2-2. Aeronautical Charts and Publications.

a. Aeronautical charts used for air navigation are generally of two groups: visual flight rules (VFR) charts and instrument flight rules (IFR) charts. The VFR charts are the Sectional charts, VFR Terminal Area charts, and the visual navigation chart. IFR charts include the En Route Low and High Altitude and Area charts as well as the Terminal Procedures Publication (TPP), which includes standard instrument approach procedure (SIAP), textual and graphic departure procedure (DP), standard terminal arrival (STAR), and Charted Visual Flight Procedure charts.

b. The primary publication, which contains basic flight information related to instrument operations in the National Airspace (NAS), is the Aeronautical Information Manual (AIM). The primary publication serving as a pre-flight and planning guide for use by United States nonscheduled operators, business, and private aviators flying outside of the United States is the Aeronautical Information Publication (AIP). AFS-400 personnel should conduct periodic surveillance of the AIM and AIP to verify the accuracy and appropriateness of the information. AIM and AIP discrepancies and errors should be forwarded to the Production Technology & ATC Products Group (AJV-36).

c. AeroNav Products personnel should monitor charts or publications released by the FAA that provide informative material, recommended or mandatory, to determine that safe operating practices and conditions are accurately described for aviation users.

d. AeroNav Products is responsible for the accuracy and completeness of flight data submitted by that office for publication. Procedure specialists should review the resulting published United States Government charts to ensure correct portrayal. AeroNav Products serves as the focal point for questions regarding the procedural data published on these charts.

e. AeroNav Products is responsible for ensuring that United States Government Aeronautical Charts conform to Interagency Air Cartographic Committee (IACC) specifications.

f. The National Flight Data Center (NFDC) serves as the focal point for questions regarding other non-procedural data; e.g., airport/runway data, frequencies, etc. NFDC will resolve questions through the appropriate data source steward.

g. Any FAA personnel who find or are notified of discrepancies and/or errors in aeronautical charts should forward the information to AFS-460, or AeroNav Products, Resource Planning and Management Support (AJV-3A). AIM and AIP discrepancies should be referred to the Production Technology & ATC Products Group (AJV-36).

Section 2-3. Environmental Requirements

2-3-1. Noise Abatement. The establishment of noise abatement procedures is the responsibility of the Air Traffic Organization. However, the Flight Standards Service has an input from an aircraft operational standpoint. These procedures should be coordinated between the appropriate regional Flight Standards Division (RFSD) and the Operational Support Group, Flight Procedures Team (OSG-FPT). The RFSD must review noise abatement procedures for aircraft performance characteristics and operational safety considerations. The OSG-FPT must review these procedures for practicality and adherence with applicable criteria, and has the primary responsibility for resolving conflicts between IFR procedures and existing or proposed noise abatement procedures.

2-3-2. Environmental Impacts. Compliance with the following directives: Order 1050.1, Policies and Procedures for Considering Environmental Impacts, and Order JO 7400.2, Procedures for Handling Airspace Matters, chapter 32, Environmental Matters, is required to meet the environmental compliance requirements of the Agency under the National Environmental Policy Act (NEPA).

Section 2-4. Facility Utilization and Monitoring

2-4-1. Frequency Service Volumes. In establishing instrument flight procedures, consideration must be given to the type of navigation facilities available and to their limitations.

a. All electronic navigation facilities are installed in accordance with frequency separation specified in distances and altitudes. Specific frequency protected service volumes are contained in Order 6050.32, Spectrum Management Regulations and Procedures Manual. The Regional Frequency Management Officer (RFMO) primarily uses this order. Order 6050.32 also contains information to facilitate understanding and coordination of operational considerations associated with expanded service volumes.

b. Operational service volume includes the standard service volume (SSV) and expanded service volumes (ESVs). The operational service volume must not extend outside the frequency protected service volume on any radial, at any distance, or at any altitude.

2-4-2. ATC Usable Distance and Altitude Limitations. When flight procedures are developed which reach outside of the standard service volumes listed below, the submission and processing of an ESV Request, is mandatory. Flight check measurements must not be used as a substitute for an approved ESV [see figures 2-4-1, 2-4-2, and 2-4-3].

a. DME/VOR/VORTAC/TACAN.

Facility Class	Usable Height Above Facility	Usable Distance (Miles)
T	12,000 and below	25
L	18,000 and below	40
H	60,000-45,000	100
	Below 45,000-18,000	130
	Below 18,000-14,500	100
	Below 14,500	40

Note: All elevations shown are with respect to the station's site elevation.

Figure 2-4-1. Standard High Altitude Service Volume

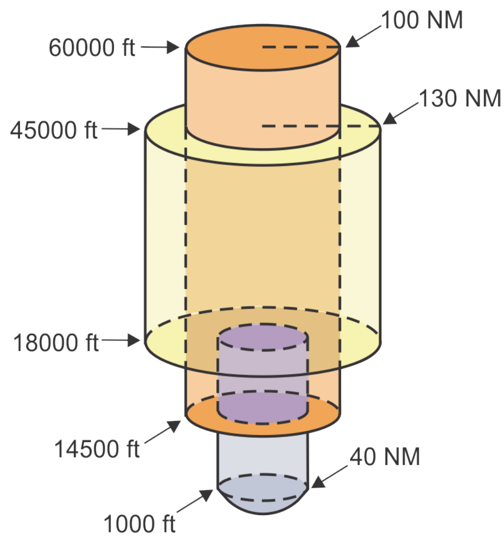


Figure 2-4-2. Standard Low Altitude Service Volume

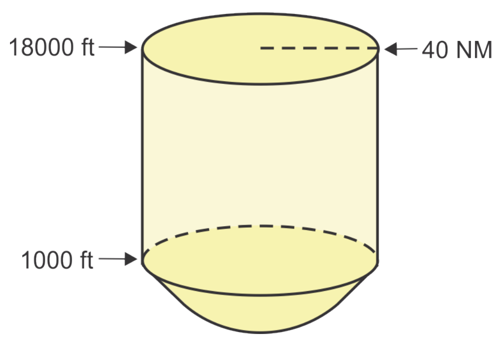
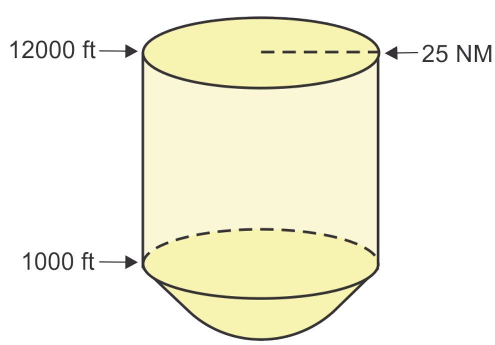


Figure 2-4-3. Standard Terminal Service Volume



b. Nondirectional Beacon (NDB).

Facility Class	Height Above Facility	Distance (Miles)
COMLO	<u>Note</u>: *Low frequency*	15
MH	*beacons have no*	25
H	*standard height*	50
HH	*limitations*	75

Note: The COMLO is an NDB of low power, strategically located on an instrument landing system (ILS) approach path to provide L/MF azimuth guidance to an airport, in addition to the more precise guidance of the ILS LOC. COMLOs are normally collocated with ILS Outer Markers (OM) and Middle Markers (MM), and referred to as “LOM” and “LMM,” respectively.

c. Instrument Landing System (ILS).

Facility	Height Above Facility	Distance (Nautical Miles)
Localizer (FC)	4,500 and below	18
Localizer (BC)	4,500 and below	18
Glide Slope	(2°-4°) varies with angle	10

2-4-3. Requests for Expanded Service Volumes (ESV).

a. When ATC requires use of navigational aids (NAVAIDs) above/beyond limitations cited in paragraphs 2-4-3a through 2-4-3d, ATC submits an ESV request, with a description of the flight procedure requiring it. The Frequency Management Officer (FMO) first reviews this request. The FMO applies the criteria contained in Order 6050.32. If the FMO disapproves the request, it is returned to the originator without further action. FMO approved or restricted ESVs are then reviewed by AeroNav Products.

b. AeroNav Products is responsible for accuracy, clarity, and practicality of the data. If the ESV request is unclear, or if the FMO approved request has restrictions or restrictive comments, it may be necessary to coordinate changes with the FMO and/or the originating office. FAA flight inspection determines if the facility supports the procedure. The flight inspector may utilize facility files and approve the ESV based on supporting data, providing the data was taken within the last five years. If sufficient data are not available, accomplish a flight check of the procedure before AeroNav Products approval.

c. The procedures specialist when developing an instrument procedure may determine a requirement for an ESV; e.g., the instrument procedure is proposed beyond SSV. In this case, the procedures specialist processes an ESV electronically via the Expanded Service Volume Management System (ESVMS website) to obtain the FMO and, in turn, flight inspection approval. An ESV request MUST not be used as a substitute for proper instrument procedure design.

d. Facility rotation due to magnetic variation change should have no effect on coverage; however, radials used will change. AeroNav Products initiates a change action via the Spectrum Management web site (ESVMS) on the date the rotation is effective.

e. Describe holding patterns by radial, distance, altitude, and the maximum length holding pattern leg.

f. An ESV is prepared and processed electronically via the ESVMS via the FAA Intranet web site. An ESV can be placed on any very high frequency omnidirectional range (VOR), instrument landing system–distant measuring equipment (ILS-DME), or tactical air navigation (TACAN). When a DME or TACAN and VOR are paired, both must have identical ESVs for safety reasons [except in those cases where the DME ESV supports DME/DME area navigation (RNAV) operations]. ESVs may be added to any class of NAVAID facilities, including NDBs.

2-4-4. Utilization of Localizers as En Route Aids. The use of a localizer in en route flight procedures may be authorized in accordance with the following limitations:

a. The use of the localizer for lateral course guidance is not authorized.

b. A localizer may serve as a crossing facility where it is essential to air traffic control.

2-4-5. Monitoring of Navigation Facilities.

a. Monitors. It is FAA policy to provide a monitoring system for all electronic navigation facilities used in support of instrument flight procedures. Internal monitoring is provided at the facility through the use of executive monitoring equipment that causes a facility shutdown when performance deteriorates below established tolerances. A remote status indicator may also be provided through the use of a signal-sampling receiver, microwave link, or telephone circuit. VOR, VORTAC, and ILS facilities as well as new NDBs and marker beacons installed by the FAA, are provided with an internal monitoring feature. Older FAA NDBs and some non-Federal NDBs do not have the internal feature and monitoring is accomplished by other means.

b. Monitoring Categories. Navigational facilities are classified in accordance with the manner in which they are monitored.

(1) Category 1. Internal monitoring plus a status indicator installed at control point. (Reverts to a temporary Category 3 status when the control point is unmanned/monitoring not available.)

(2) Category 2. Internal monitoring with status indicator at control point inoperative, but pilot reports indicate the facility is operating normally. (This is a temporary situation that requires no procedural action.)

(3) Category 3. Internal monitoring only.

(4) Category 4. Internal monitor not installed. Remote status indicator provided at control point. This category is applicable only to nondirectional beacons.

2-4-6. Utilization of Monitoring Categories.

a. Category 1 facilities may be used for instrument flight procedures without limitation.

b. Category 2 is a temporary condition not considered in instrument procedure development. The Air Traffic Organization is responsible for issuing Notice to Airmen (NOTAMs) on these out-of-service facilities when pilot reports indicate facility malfunction.

c. Category 3 facilities may be used in accordance with the following limitations:

(1) Alternate minimums must not be authorized if facility provides final approach course (FAC) guidance; is required for procedure entry; is used to define the final approach fix (FAF); or is used to provide missed approach guidance. See also paragraph 8-6-4b.

(2) Consider denying or adjusting terminal routes that require reception of succeeding Category 3 facilities to avoid obstacles.

(3) Dogleg airways or routes must not be predicated on these facilities.

(4) Navigational fixes developed from crossing radials of Category 3 facilities must not be used to break a minimum en route altitude (MEA) to higher MEA (can be used as a break to a lower MEA).

d. Category 4 facilities may be used in accordance with the following limitations:

(1) Alternate minimums may be authorized when the remote status indicator is located in an FAA ATC facility, and then only during periods the control point is attended.

(2) If the control point is other than an FAA facility, a written agreement must exist whereby an ATC facility is notified of indicated changes in facility status.

Note: Failure of this Category 4 status indicator or closure of the control point will render the facility and the approach procedure unusable during the outage.

2-4-7. Utilization of 75 MHz Markers. The 75 MHz markers may be used as the sole source of identification with the following limitations:

a. Missed Approach Point (MAP). Markers may be authorized as missed approach points for nonprecision approaches, provided a remote status indicator (RSI) is installed at an ATC facility.

b. Final Approach Fix. As a non-precise final approach fix, the marker must be monitored if alternate minimums are authorized. The marker need not have an RSI if collocated with a compass locator with a remote status indicator.

c. Course Reversals. Procedure turns and holding must not be authorized from a 75 MHz marker.

d. Breaks in MEAs. The 75 MHz markers must *not* be used to define the point where an en route climb to a higher altitude is required (may be used as a break to a lower altitude).

e. DP Turn Points. The 75 MHz markers must not be used to identify turn points on departure procedures. See Order 8260.46, Departure Procedure (DP) Program, paragraph 2-1-1d.

Section 2-5. Implementing Epoch Year Magnetic Variation (MV)

2-5-1. General. This section establishes the MV program, identifies participating offices, assigns responsibilities, and provides guidelines for accomplishing the tasks necessary for implementing, maintaining, and systematically updating Epoch Year Magnetic Variation Values.

a. Background. The National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), and the National Geodetic Survey (NGS), for all areas of the United States and its territories for application to navigation charts and maps, is the source for magnetic variation (MV) information and tools for establishing magnetic variation. Changing values for MV are tabulated and published on a 5-year epoch basis; e.g., 00, 05, 10, 15, 20, etc. In order to assist in stabilizing the NAS, a fixed value of MV is assigned to each navigational aid and airport as the Magnetic Variation of Record. This value is applied to true directions to obtain the magnetic values for radials, courses, bearings, and headings published in instrument flight procedures. Periodic updating of the MV assigned to navigation facilities is required to maintain reasonable proximity of alignment with the earth's ever-changing magnetic field. It is possible that the magnetic course displayed by the aircraft's RNAV system is different than the magnetic course portrayed on the IFP chart.

Note: RNAV systems, unlike IFP designs, generally apply the magnetic variation value stored in their navigational database, though other values are sometimes applied. As such, it is entirely possible that the magnetic variation applied by the RNAV system is different than the magnetic variation used by the procedure designer when the IFP chart was last updated. Thus, the magnetic course displayed by the RNAV system may not match the magnetic course charted on the IFP plate. Despite this difference, an RNAV system should still navigate properly as these systems use true north for navigation and only display magnetic course for pilot reference.

b. Participating Offices. Management and control of Epoch Year MV values require action by the following offices:

(1) AeroNav Products.

(2) Military Organizations.

(3) National Flight Data Center (NFDC).

(4) Western, Central, and Eastern Technical Operations.

(5) Western, Central, and Eastern OSG-FPTs.

(6) Regional Airports Divisions.

2-5-2. Responsibilities.

a. AeroNav Products.

(1) Publish isogonic lines or segments on appropriate aeronautical charts based on current Epoch Year values.

(2) Revise en route aeronautical charts and Airport/Facility Directives (AFDs) to reflect revised MV assignments to navigation facilities in accordance with information published in the National Flight Data Digest (NFDD).

(3) Revise en route charts to apply yearly MV change values to RNAV ("Q" and "T") route Magnetic Reference Bearings (MRB) during the first airspace charting cycle of each calendar year.

(4) Function as the focal point for all information relating to application of MV to the following elements of the NAS: navigational aids, airports, instrument flight procedures; and for coordination and liaison between AeroNav Products and the applicable Air Traffic Service Area OSG-FPTs. The OSG-FPTs will coordinate with the Regional Airports and Air Traffic offices with respect to matters pertaining to change in navigational aid or airport MV of Record and its effect on instrument flight procedures.

(5) Function as the focal point for FAA and all NAS Facilities flight inspection coordination. Terminal facilities (other than VOR, VOR/DME, TACAN, VORTAC, and radar systems) do not require flight inspection of MV changes.

(6) Determine whether NOTAM action is necessary when required procedural adjustment action or MV change is not accomplished by the effective date of amended instrument procedures or revised en route charts.

(7) For FAA and all NAS Facilities, assign and maintain MVs of Record for navigational facilities and airports in whole degree increments. MVs of Record are available in the AIRNAV facility database. For new or relocated facilities, and new or revised instrument procedures, apply the appropriate MV. Analyze each facility identified as a candidate for revised MV assignment to determine if facility rotation and/or re-designation of radials are required.

(8) Establish a process to record the assigned magnetic variation and epoch year of navigational aids and airports by geographical location and the projected MV for the next Epoch Year. The process must also include the ability to identify those candidate navigational aids and airports with a difference of two degrees or more between the MV of Record and the nearest future Epoch Year value.

(9) Notify NFDC (in AJV-21) of changes to assigned MV and the effective date of those changes for publication in the NFDD; notify other concerned offices having related responsibilities to ensure timely implementation of necessary actions. The effective date selected must allow sufficient time for procedures processing in accordance with established schedules. MV changes, which affect only terminal instrument procedures, may have an effective date concurrent with publication of a specific procedural amendment.

(10) Amend instrument flight procedures as required, predicated on navigational aids or airports undergoing a change of MV of Record. Conduct a thorough review survey to determine the full impact the MV change will have on any instrument procedures. Such reviews must include high and low altitude ATS routes, direct routes, air carrier off-airway routes, fixes in both high and low altitude structures, terminal routes and fixes, obstacle departure procedures (ODPs), standard instrument departures (SIDs), standard terminal arrival routes (STARs), and

any other application to instrument flight procedures. Use the MV of Record (or as officially changed) to develop instrument flight procedures - regardless of the MV shown on the airport diagram chart or similar product being used.

(11) VOR, VOR/DME, and VORTAC facilities supporting the en route structure (which may or may not have instrument procedures predicated on them):

(a) Modify all fixes and instrument approach procedures (IAPs). Modify all Title 14 Code of Federal Regulations, Part 95 (14 CFR Part 95) Direct and Off-Airway (Non-14 CFR Part 95) routes with documented radial(s) or bearing(s). Change ESVs. Make all modifications to meet an effective date that coincides with the en route change cycle.

Note: A listing of affected fixes, holding patterns, DPs, SIDs, STARs, military training routes, preferred routes, and ATS routes may be obtained from NFDC.

(b) Coordinate changes with the OSG-FPT (OSG-FPTs are expected to coordinate with the applicable ARTCC and/or approach control) in an attempt to eliminate routes, fixes, and instrument procedures that are no longer required.

(12) Navigational aids *not* supporting en route structure:

(a) Initiate implementation of the nearest future Epoch Year MV in accordance with paragraph 2-5-3a, whenever any instrument procedure is established or amended. The nearest future Epoch Year MV will become effective concurrent with publication of the amendment [see paragraphs 8-6-8n and 8-6-8o].

(b) Amend and process multiple instrument procedures to simultaneously become effective concurrent with the instrument procedure specified in the MV change notification to NFDC.

(c) Submit revisions of all affected fixes with the instrument procedure(s). Change ESVs.

(d) Amend radar and direction finder (DF) procedures when the airport MV of Record is changed. If the DF is located at an off-airport site, obtain the MV for the antenna site; include MV and Epoch Year in the lower right corner of the Form 8260-10 (see section 4-3).

(13) Army Facilities.

(a) Accomplish MV changes for United States Army facilities in the same manner as for civil facilities; however, obtain the installation commander's prior approval.

(b) Notify the appropriate military representatives, in writing, when the need to change the MV of other military facilities is identified.

b. United States Air Force (USAF).

(1) Function as the focal point for all USAF applications of MV for USAF facilities within and outside the NAS to include; navigational aids, airports, instrument flight procedures.

(2) Function as the focal point for USAF non-NAS facility flight inspection requirements and coordination. Terminal facilities (other than VOR, VOR/DME, TACAN, VORTAC, and radar systems) do not require flight inspection of MV changes.

(3) Determine whether NOTAM action is necessary when required procedural adjustment action or MV change is not accomplished by the effective date of amended instrument procedures or revised en route charts.

(4) Assign and maintain MVs of Record for USAF non-NAS navigational facilities and airports in whole degree increments. For new or relocated facilities, and for new or revised instrument procedures, apply the appropriate MV. Analyze each facility identified as a candidate for revised MV assignment to determine if facility rotation and/or re-designation of radials are required.

(5) Maintain a listing/record of USAF navigational aids and airports by geographical location. Indicate the currently assigned MV of Record and the projected MV for the next Epoch Year. For the purpose of planning and implementation, maintain a current listing of those candidate navigational aids and airports with a difference of two degrees or more between the MV of Record and the nearest future Epoch Year value.

(6) Notify AeroNav Products of changes to USAF non-NAS facilities assigned MV and the effective date of those changes in order to generate a letter to NFDC for publication in the NFDD; notify other concerned offices having related responsibilities to ensure timely implementation of necessary actions. The effective date selected must allow sufficient time for procedures processing in accordance with established schedules. MV changes, which affect only terminal instrument procedures, must have an effective date concurrent with publication of a specific procedural amendment.

(7) Amend instrument flight procedures as required, predicated on navigational aids or airports undergoing a change of MV of Record. Conduct a thorough survey to determine the full impact the MV change will have on any instrument procedure. Such surveys must include high and low altitude airways/jet routes, direct routes, air carrier off-airway routes, fixes in both high and low altitude structures, terminal routes and fixes, ODPs, SIDs, STARs, ESV's, and any other application to instrument flight procedures. Use the MV of Record (or as officially changed) to develop instrument flight procedures - regardless of the MV shown on the airport diagram or similar product being used.

(8) USAF navigational facilities within the NAS:

(a) Maintain official listing of USAF facilities that are part of the NAS.

(b) Notify AeroNav Products when MV changes are required. Allow sufficient time for modification of FAA fixes and IAPs as necessary.

(9) USAF navigational facilities *not* within the NAS:

(a) Initiate implementation of the nearest future Epoch Year MV, as per paragraph 2-5-2a, whenever any instrument procedure is established or amended. The nearest future Epoch Year MV must become effective concurrent with publication of the amendment [see paragraphs 8-6-8n and 8-6-8o].

(b) Amend and process multiple instrument procedures to simultaneously become effective concurrent with the instrument procedure specified in the MV change notification to NFDC.

(c) Submit revisions of all affected fixes with the instrument procedure(s). Change ESVs, as required.

(d) Amend all procedures as, required, when the airport MV of Record is changed.

c. United States Navy.

(1) Contact AeroNav Products to obtain the MV of Record or MV assignments for new or relocated facilities to be applied to navigational aids or airports under Navy jurisdiction.

(2) Coordinate with AeroNav Products to determine impact of MV changes for both military and public facilities.

(3) Navy flight procedure development work generally follows the same requirements as AeroNav Products' flight procedure development work as outlined in paragraphs 2-5-2b(3) through (9). The AeroNav Products will remain the office of primary responsibility for paragraphs 2-5-2b(1), (2), (4), and (5) functions.

(4) Notify AeroNav Products of changes to Navy, non-NAS facilities, assigned MV and the effective date of those changes in order to allow AeroNav Products to generate a letter to NFDC for publication in the NFDD; notify other concerned offices having related responsibilities to ensure timely implementation of necessary actions. The effective date selected must allow sufficient time for procedures processing in accordance with established schedules. MV changes, which affect only terminal instrument procedures, must have an effective date concurrent with publication of a specific procedural amendment.

(5) Navy navigational facilities within the NAS:

(a) Maintain official listing of Navy facilities that are part of the NAS.

(b) Notify AeroNav Products when MV changes are required. Allow sufficient time for modification of FAA fixes and IAPs as necessary. National Flight Data Center. When notified by AeroNav Products of any change to MV of Record, publish a notice of change in the NFDD. An effective date of change must be included in the NFDD.

d. Western (AJW-W), Central, (AJW-C), and Eastern (AJW-E) Technical Operations. Coordinate with the respective OSG-FPT to obtain the appropriate MV of Record for assignment to newly installed or relocated navigational aids.

e. Regional Airports Division/Airports District Office (ADO). Coordinate with the applicable OSG-FPT prior to establishing or revising runway designator numbers for an airport having one or more instrument approach or departure procedures, to determine the appropriate MV to be applied to the runway true bearing. Determination of the runway designator number should be a matter of joint agreement with AeroNav Products, and be accomplished sufficiently in advance to allow for procedural amendments. Take appropriate NOTAM action if repainting of an affected runway has not been accomplished on the required date.

2-5-3. Guidelines. The identification and selection of navigational aids or airports as candidates for revision of MV of Record require careful consideration and evaluation of a number of factors - as the impact of MV changes can be considerable. The applicable Air Traffic Service Area Office may have to initiate or revise published air traffic procedures; the Technical Operations Service (AJW-0) is directly involved in facility rotations and requires proper coordination. The Airports Division, or appropriate military authority, may have to arrange for repainting of runway designator numbers [see paragraph 8-6-9e(2)(e)].

Note: Guidelines pertaining to runway designation marking relative to magnetic changes can be found in AC 150/5340-1, Standards for Airport Markings.

a. MV versus Epoch Year Value. When the difference between the MV of Record and the nearest future Epoch Year value of any navigational aid or airport is three degrees or more, the MV of Record must be changed to the nearest future Epoch Year value. When the difference is less than three degrees, consider implementing the nearest future Epoch Year value when workload permits and approved by the Regional Airspace and Procedures Team (RAPT). Factors to consider include whether the navigational aid is isolated or in close proximity to one or more other facilities, whether on airport or away from an airport, and the impact on instrument flight procedures. For CAT II/III ILS facilities, the intent is to keep these facilities as closely aligned with the actual [as predicted by the World Magnetic Model (WMM)] magnetic variation at the airport. Maintain the assigned magnetic variation value for these facilities within ±1 degree of the current airport magnetic variation. If it exceeds one degree, assign the ILS the current magnetic variation (to the nearest whole degree) and list it as the next future epoch year value.

Note 1: The NOAA WMM estimates MV at any location and day within the five-year validity window of the model. For example, the WMM for 2010 provides MV values for all locations for January 1, 2010 through December 31, 2014. The nearest future Epoch year to be used after January 1, 2010 would be specified as 2015, and the corresponding MV typically based on the December 31, 2014 value. However, the assigned MV may be listed as using the 2015 epoch even though the value may be associated with a date earlier in the validity period of the model. This would occur when it is required in order to maintain the assigned value for a CAT II/III facility within one degree of the current value.

Note 2: At airports that have CAT II/III instrument procedures, the one-degree tolerance effectively applies to the airport MV, the MV for all facilities on the airport, and the MV for all RNAV procedures required to use the aerodrome MV as indicated in paragraphs 2-5-3(b), 2-5-3(d), and 2-5-3(f) below.

Note 3: At locations that have CAT II/III instrument procedures, do not apply future Epoch Year MV values that would create a MV of Record that exceeds one degree of the current, actual airport MV.

b. Facilities on Airports. At airports with localizer(s) or more than one navigational aid, the MV at the airport reference point (ARP) must be designated and assigned to all facilities at that airport, including all components of the ILS.

c. MV versus OC Chart Value. Where the assigned MV of Record differs from the MV shown on the Obstruction Chart (OC), the assigned MV of Record must be used in the development of instrument flight procedures.

d. Runway heading must be assigned the same MV as the airport.

Note: The actual runway heading is published on airport diagrams to allow pilots to obtain a compass bearing check during runway line-up. This value may differ from the value computed during the assigned variation.

e. At major airport terminal areas, the ARP MV of Record at the designated controlling airport may be used in determining the MV applied to all navigational aids serving the terminal areas.

f. Standard Rules for Applying Magnetic Variation to True Radials, Bearings, and Courses.

(1) Ground Based and Radar Facilities.

(a) Utilize the facility Magnetic Variation of Record to determine magnetic tracks, and courses.

(b) Runways that have CAT II/III ILS procedures must have the charted final course conforming to the runway heading updated when the difference is greater than one degree.

(2) RNAV.

(a) Instrument Approach Procedures (IAPs)/DPs/STARs. Magnetic variation is applied to any track/course used in an RNAV instrument procedure and it must be the magnetic variation of the aerodrome of intended landing or departure. Some aircraft navigation systems use a “reference NAVAID” for obtaining magnetic variation information based on course (Cx) leg types and track from fixes (Fx) leg types. For IAPs, specify in the ARINC Record (for RNAV Departure Procedures, specify in the Remarks section of Form 8260-15C), a NAVAID that has the *same* assigned magnetic variation as the airport magnetic variation.

(b) Holding on IAPs/DPs/STARs. RNAV track/course information is based on the true track/course from one fix to a succeeding fix. To determine the magnetic track/course, apply the published magnetic variation of the aerodrome, or the en route VOR or NDB assigned variation when proceeding "to" the NAVAID used as part of a procedure/holding pattern fix to the procedure true track/course.

(c) Holding on Routes or Stand-Alone. For RNAV only holding patterns not associated with an instrument procedure or a VOR or NDB used as the holding fix, determine the magnetic variation by using the magnetic declination (variation) for the holding fix latitude/longitude. This information may be calculated using the National Geophysical Data Center (NGDC) website.

Section 2-6. Notices to Airmen (NOTAMs)

2-6-1. General. NOTAMs provide timely knowledge, to flyers and other aviation interests, of information or conditions, which are essential to safety of flight. NOTAMs pertaining to IFPs are effective upon issuance and must remain in effect until the pertinent aeronautical charts are amended or the condition requiring the NOTAM ends. This section deals primarily with procedures for issuing Flight Data Center (FDC) NOTAMs when required to maintain the accuracy and currency of terminal and en route IFPs. Also, see Order 8260.3.

2-6-2. United States NOTAM System. The United States NOTAM System (USNS) has been established to provide aviators with the current status of the NAS. This system is under the purview of FAA's Air Traffic Organization, Vice President of System Operations Services, Flight Services, Safety and Operations Policy Group (AJR-B1). Management and operational guidance is contained in Order JO 7930.2, Notices to Airmen (NOTAMs). The following is a brief summary of the use of FDC NOTAMs and related issues due to IFP changes, NAVAID outages, and government aeronautical chart corrections.

a. FDC NOTAMs are normally used to disseminate safety of flight information relating to regulatory material as well as to all IFPs and are issued through the United States NOTAM Office (USNOF) [see Order JO 7930.2, chapter 7, for specific FDC NOTAM categories]. FDC NOTAMs are numbered by the USNS to reflect the year of issuance and the sequence number for the calendar year, (e.g., 3/0445). FDC NOTAMs are transmitted on all Service B circuits, and stored in the Consolidated NOTAM System, after which they are entered in the Notices to Airmen Publication (NTAP) until canceled. The NTAP is distributed via United States mail and is available on-line at http://www.faa.gov/air_traffic/publications/notices. Publication of FDC NOTAMs relating to instrument approach and departure procedures and air traffic service (ATS) routes in the NTAP does not authorize cancellation of the NOTAM. NOTAMs relating to IFPs must remain current until canceled or published in the U.S. Terminal Procedures Publication (TPP) or on the applicable IFR En route Chart(s).

b. NOTAM Ds are issued under the Flight Service Station's Accountability System and receive the same dissemination as the surface weather report for the originating station, and provide the user with current information. They are numbered to reflect the month of issuance and the sequence number of the NOTAM within the month, (e.g., 08/018).

2-6-3. Instrument Flight Procedure NOTAMs. Changes to IFPs that have been charted and distributed, are processed as FDC NOTAMs and issued through the USNOF. Except as noted in paragraph 2-6-5b, procedural minimums must not be lowered by NOTAM unless fully justified as a safety of flight issue. Both temporary and permanent conditions may be promulgated via an FDC NOTAM at the direction of AeroNav Products.

Note: The formerly used "FI/T" and "FI/P" designations must not be used.

a. Temporary Conditions. NOTAMS for temporary conditions (T-NOTAMs) whose expiration time is uncertain and approximate must be identified by the addition of "EST" following the NOTAM expiration date/time group (see paragraph 2-6-4b). The "EST" suffix may be used with all IFP T-NOTAMs.

(1) When it is known that the condition requiring a NOTAM will be effective for more than four chart cycles (224 days), a procedure amendment (revised 8260-series form or permanent NOTAM, see paragraph 2-6-3b) must be submitted as soon as possible to allow publication of the change within the 224-day timeframe.

(2) When the estimated timeframe for temporary conditions requiring NOTAM action is unknown or cannot be determined and the condition is beyond the control of the NOTAM issuing authority; e.g., airport construction, NAVAID restrictions, temporary obstructions, etc., the NOTAM issuing authority will ensure the line of business (LOB) approving the temporary condition is advised (copy to AFS-460) of the procedural impact and the necessity of reconciling the condition as soon as possible so the temporary NOTAM can be canceled within the 224-day timeframe. If the condition cannot be corrected within 224 days, the NOTAM issuing authority must obtain Flight Standards approval from AFS-460 for the NOTAM to remain in effect beyond the 224-day limitation. <u>It is important that NOTAMs not be allowed to remain active for excessive periods of time; therefore, an FDC IFP NOTAM must not be canceled and re-issued</u>.

Note: Requests for Flight Standards approval must be coordinated with AFS-460 as soon as the requirement is known. For example, it is known that a temporary crane affecting an IFP(s) will be in place for 10 months as soon as it is erected; therefore, forward the approval request for extension immediately.

b. Permanent Conditions. When the condition requiring NOTAM action is known to be permanent or is expected to be effective for more than four charting cycles (224 days), a permanent NOTAM (P-NOTAM) may be used to promulgate amended SIAPs and textual ODPs as well as correction information for United States government aeronautical charts. P-NOTAMs must be identified by inserting "PERM," meaning the condition is permanent, instead of an actual expiration date/time group (see paragraph 2-6-4b). P-NOTAMs identify procedural amendments that may be charted from the NOTAM information. P-NOTAMs may also be used as a substitute for the abbreviated amendment process within the limitations specified in paragraph 8-3-4c. P-NOTAMs relating to instrument flight procedures contain information that is complete for charting purposes and are promulgated in the bi-weekly Transmittal Letter (TL) with a specified procedure amendment date that is coincidental with an international Aeronautical Information Regulation and Control (AIRAC) charting date. Additionally, the following rules apply when initiating a P-NOTAM:

(1) P-NOTAMs may only be used for SIAPs, textual ODPs, and to correct U.S. government charting printing and compilation errors. P-NOTAMs must *not* be used for changes to Special IFPs, ATS routes, graphic ODPs, SIDs, and STARs.

(2) P-NOTAMs may be used to amend procedures without a complete review of the procedure. The amendment will be indicated by an alphanumeric identifier; e.g., Orig-A, Amdt 3B, Amdt 4C, etc.

(3) Only one procedure may be addressed per P-NOTAM except that a single P-NOTAM may be used for ILS CAT I/II/III and SA CAT I /II procedures to the same runway. A single P-NOTAM may also address multiple procedures at a single location when correcting a common printing error on U.S. government charts.

(4) A hard/electronic copy of each P-NOTAM must be stored with the current amendment and maintained in the procedures file by both the NFDC and AeroNav Products for each procedure until the next full amendment is effective.

(5) P-NOTAMs must not be used for RNAV/database driven procedures when the change(s) will affect waypoint coordinates, course (track), distances, or bearings.

(6) The P-NOTAM originator must coordinate a procedure amendment date with AeroNav Products for inclusion in the Transmittal Letter. This will ensure that all charting agencies publish the amended procedure on the same AIRAC chart cycle and with the same procedure amendment date.

(7) Each AIRAC cycle is limited to no more than 150 P-NOTAMs, except for Flight Standards directed safety initiatives or national implementation processes. Whenever the 150 P-NOTAM limit must be exceeded, AeroNav Products is responsible for coordinating with other charting agencies; e.g., Jeppesen, LIDO, etc., to ensure they can accommodate the necessary changes on the required AIRAC date.

(8) P-NOTAMs must be canceled when the applicable procedural change has been published.

2-6-4. FDC NOTAM Preparation, Review, and Transmittal Responsibilities.

a. Keywords. All NOTAMs must contain a keyword to facilitate parsing and international harmonization. A complete listing of keywords is contained in Order JO 7930.2. Those keywords applicable to FDC NOTAMs relating to IFPs and ATS routes are listed below. Insert the applicable keyword immediately following the three or four character location/ARTCC identifier or the two-letter state identifier for ATS route NOTAMs contained within a single state.

Keyword	Associated Procedure
IAP	Instrument Approach Procedure
ODP	Obstacle Departure Procedure
SPECIAL	Special Instrument Flight Procedure (regardless of type)
SID	Standard Instrument Departure
STAR	Standard Terminal Arrival
VFP	Visual Flight Procedure
ROUTE	Air Traffic Service Route
CHART	U.S. Government Chart Correction

b. Effective Time/Expiration Time. All NOTAMs must contain an effective time and expiration time to achieve international harmonization. Times used in the NOTAM system are Coordinated Universal Time (UTC/Zulu), unless otherwise stated, and are formulated as a 10-digit date-time group (DTG) indicating year, month, day, hour and minute; e.g., YYMMDDHHMM. The effective time indicates the date/time a condition will exist or begin. The expiration time is the expected time the NOTAM is no longer required. The terms "UFN," "WEF," "WIE," and "TIL" must not be used to describe the effective or expiration time. The effective/expiration times are formulated as a 10-digit date-time group (DTG) indicating year, month, day, hour and minute; e.g., YYMMDDHHMM. The effective time and expiration time must be separated by a hyphen "-" and entered as the last data entry of the NOTAM.

(1) If the NOTAM duration is uncertain, the approximate expiration time must be indicated by using a date-time group followed immediately by "EST" suffix. A NOTAM with "EST" will not self-cancel; therefore, appropriate corrective action(s) must be taken within 224-days [see paragraph 2-6-3a(2)]. Notice there is no space between the DTG and the word EST.

Example:

!FDC 3/0416 GXY IAP GREELEY-WELD COUNTY, GREELEY, CO.
ILS OR LOC RWY 34, AMDT 2...
PROC NA. 1305011200-1312111200EST

(2) When a P-NOTAM is originated to permanently amend a SIAP or textual ODP, "PERM" must be inserted as the expiration date in lieu of a 10-digit date-time group. The NOTAM originator is responsible for cancelling the NOTAM upon publication.

Example:

!FDC 3/1234 LAN IAP CAPITAL CITY, LANSING, MI.
ILS RWY 10R AMDT 8A...
CIRCLING MDA 1420/HAA 559 ALL CATS.
THIS IS ILS RWY 10R AMDT 8B. 1305011200-PERM

(3) A NOTAM will self-cancel at the expiration DTG unless "EST" or "PERM" is used.

c. Non-FAA Service Provider. AFS-460 is responsible for delegating NOTAM responsibility for procedures developed under a service provider agreement to the non-FAA service provider (see paragraph 2-6-4e).

d. Aeronautical Navigation Products is responsible for:

(1) Formulating IFP and ATS route NOTAMs for procedures for which they have responsibility and forwarding them for transmittal.

(2) Formulating FDC P-NOTAMs used to correct aeronautical chart printing and compilation errors related to all United States Government aeronautical charting products and forwarding them for transmittal. See paragraph 2-6-6.

(3) Designating an office to develop specific internal guidance for NOTAM preparation, quality control, transmittal, cancellation, and follow-up actions for FDC NOTAMs issued by AeroNav Products. This guidance must be developed in concert with the NFDC and the USNOF. As a minimum, the guidance must include the following:

(a) Procedures to ensure that all affected ARTCC facilities are provided notification of NOTAMs at the time of submission, [see Order 8260.3].

(b) Procedures to ensure that the airport manager at the affected location is notified whenever possible.

(c) Procedures to ensure all NOTAMs are reviewed for accuracy, completeness, content, etc. prior to submission.

(d) Procedures to ensure the NFDC is provided information copy of all NOTAMs and cancellations.

(e) Procedures to ensure non-FAA service providers are provided an information copy of all NOTAMs and cancellations at those locations where non-government procedure development is allowed. This will ensure non-FAA service providers are aware of the condition requiring the NOTAM.

e. Flight Procedure Implementation & Oversight Branch, AFS-460. AFS-460 is responsible for coordinating non-government procedure developer NOTAM authority and access to the NOTAM Entry System (NES) with ATO Mission Support Services, Aeronautical Information Management (AIM) Office. The Branch is also responsible for ensuring that specific guidance for NOTAM preparation, quality control, transmittal, cancellation, and follow-up actions are developed for NOTAMs applicable to public and Special IFPs developed by non-government service providers and not under the purview of AeroNav Products. As a minimum, the guidance must ensure the non-FAA service provider NOTAM originators include the following:

(1) Procedures to ensure that all affected ARTCC facilities are provided notification of NOTAMs at the time of submission [see Order 8260.3]. The NOTAM issuing authority must also attempt to notify the airport manager at the affected location whenever possible.

(2) Procedures to ensure all NOTAMs are reviewed for accuracy, completeness, content, etc. prior to submission.

(3) Procedures to ensure the NFDC is provided an information copy of all NOTAMs and cancellations.

(4) Procedures to ensure that AeroNav Products is aware of those locations where non-FAA service provider procedure development is allowed.

(5) Procedures to ensure that AeroNav Products is provided an information copy of all NOTAMs and cancellations issued by other non-FAA service providers. This will ensure FAA procedure developers are aware of the condition requiring the NOTAM.

f. AFS-460 also serves as the approval authority for requests that temporary NOTAMs be allowed to extend beyond the 224-day timeframe. See paragraph 2-6-3a(2).

g. The NFDC is responsible for ensuring a hard/electronic copy of each P-NOTAM is store with the current amendment and maintained in the procedures archive file. See paragraph 2-6-3b(4).

h. The USNOF is responsible for ensuring that FDC NOTAMs are in the proper format under this directive and Order JO 7930.2. Questions/discrepancies will be addressed to the Aeronautical Products Office, Regulatory Support and Coordination Team or the NOTAM originating agency as appropriate. The USNOF must ensure that NFDC and the FDC NOTAM originating office are apprised of all changes in instrument flight procedure and chart correction related FDC NOTAM numbering; i.e., when a NOTAM is canceled and reissued due to typographical error, etc. The Aeronautical Products Office, Regulatory Support and Coordination Team must be notified whenever changes are made to P-NOTAMs correcting United States Government charts.

2-6-5. Instrument Flight Procedure NOTAMs. A complete review and a new amendment are the preferred methodology for permanent procedure changes, particularly when applying new or revised Order 8260.3 criteria. However, it is recognized that this may not always be possible due to time constraints, workload, staffing level, etc. Abbreviated 8260-series forms and/or P-NOTAMs have proven to be an effective means of updating aeronautical charts and amending instrument flight procedures within the following guidelines:

a. Whenever the need for a NOTAM to a procedure arises, AeroNav Products or the non-FAA service provider must review the procedure and ascertain that there is no other safety of flight changes required. Do *not* prepare a NOTAM solely to address minor non-safety related discrepancies to an IFP. However, if a P-NOTAM is required to amend a SIAP or textual ODP for safety reasons, other items may be included in the NOTAM to simultaneously update procedure charts.

b. Procedural minimums must not be lowered by NOTAM except when returning minimums to their previously published level at the end of a temporary condition.

c. Exercise caution in initiating or adding a NOTAM to a procedure when there is already a current NOTAM in effect for the procedure. In many cases close follow-up action, including canceling and reissuing NOTAMs, will be necessary to ensure there is no confusion for pilots and chart producers. All FDC NOTAMs must be issued against the currently published procedure.

Example:

The currently published SIAP is AMDT 3 and AMDT 3A has been forwarded but not yet published. Another NOTAM is required prior to AMDT 3A becoming effective. Issue a T-NOTAM against AMDT 3. When AMDT 3A is published, the T-NOTAM must be canceled and reissued (as either a T-NOTAM or P-NOTAM, as appropriate) for AMDT 3A.

d. For SIDs and STARs serving multiple airports, a separate FDC T-NOTAM must be prepared for each airport affected by the procedure. P-NOTAMs must not be used as a source to effect charting changes for these procedures. Permanent procedural changes to graphic ODPs and SIDs must be made via a new or amended 8260-15 series form (Form 7100-9 for STARs) within 224 days of the issuance of the associated NOTAM.

e. When changes to civil procedures also affect FAA-developed military procedures at civil or joint-use airfields, AeroNav Products must issue NOTAMs for the military procedure as specified in Orders 8260.15, United States Army Terminal Instrument Procedures Service, and 8260.32, United States Air Force Terminal Instrument Procedures Service. AeroNav Products must request the USNOF to forward the civil NOTAM and the reason to the cognizant military authority for appropriate military NOTAM action.

f. NOTAM requirements for FAA developed United States Army procedures must be processed under Order 8260.15. NOTAM requirements for FAA-developed United States Air Force procedures at civil airfields must be processed under Order 8260.32.

2-6-6. Chart Correction NOTAMs. FDC NOTAMs to correct U.S. government chart printing or compilation errors are issued by AeroNav Products. If the NOTAM is used to correct an IFP, specify the location identifier of the airport affected by the procedure, the full procedure title and amendment number (if applicable). If the NOTAM is used to correct a map; e.g., VFR Sectional Chart, IFR En route Chart, etc., use “FDC” as the location identifier. The first word in the NOTAM text should be “correct.”

Examples:

!FDC x/xxxx VLL CHART TROY/OAKLAND, TROY, MI.
VOR-A, ORIG...
CORRECT FAF TO READ PERLS INT. VS PERSL INT. 1307091200-PERM

!FDC x/xxxx FDC CHART U.S. GOVERNMENT CHART
NORTH ATLANTIC ROUTE CHART, EFFECTIVE 5 MAY 2011…
CORRECT ROUTE IDENTIFIER A763 BETWEEN GRAND TURK ISLAND (GTK) VORTAC AND AGUADILLA (BQN) VORTAC TO READ R763. 1307091200-PERM

FDC x/xxxx FDC CHART U.S. GOVERNMENT CHART
IFR EN ROUTE LOW ALTITUDE CHART L-3, PANEL C, EFFECTIVE 23 SEPT 2010...
CORRECT VICTOR AIRWAY V458 BTW JLI VORTAC (330825.651N/116 35 09.365W) AND KUMBA INT (324543.180N/1160313.370W) MEA SHOULD READ 7700 VICE 7800. 1305011200-PERM

2-6-7. General NOTAM D Actions. A NOTAM D is used to disseminate other safety of flight information that does not fall under the FDC NOTAM process; e.g., changes in any aeronautical facility, service, procedure, or hazard that is deemed essential to personnel concerned with flight operations. NOTAM Ds use keywords; e.g., AIRSPACE, NAV, COM, SVC, RWY, etc., to identify subject matter. Refer to Order JO 7930.2, for additional keywords and formatting requirements.

a. When a NOTAM D is issued closing an airport permanently, an FDC NOTAM need not be issued denying use of an IFP. A routine procedure cancellation should be processed.

b. When a NOTAM D is issued to shut down a facility permanently, only routine cancellations of procedures predicated on that facility are required. FDC NOTAMs may be required for other procedures supported by the affected facility.

c. When a NOTAM D is issued closing a runway, an FDC NOTAM need not be issued denying approach or departure minimums to that runway. If the closing is permanent, routine procedure cancellations, including takeoff/departure procedures, must be processed immediately.

d. When a NOTAM D is issued for a facility shutdown or outage, an FDC NOTAM denying IFP use is not required for those IFPs using only that facility. However, other IFPs in the vicinity must be reviewed to determine if that facility supports courses or fixes; in such cases, those IFPs require an FDC NOTAM. Particular attention must be given to fixes supporting stepdown minimums and missed approach procedures, which are predicated on the out-of-service facility. It is not necessary to issue NOTAMs for fixes and terminal route segments that are related to unusable airway segments from the subject facility. Do not issue "Radar Required" NOTAMs on unusable or restricted ATS route segments. Also, see paragraph 4-4-3 for ILS Cat II/III NOTAM restrictions.

e. Area Navigation (RNAV) Substitution. Properly equipped aircraft may substitute RNAV systems for inoperative ground NAVAIDs; however, RNAV systems *must not* be substituted for NAVAIDs providing final approach course guidance on instrument approach procedures.

(1) When the use of an instrument approach procedure, departure procedure (SID or ODP), or STAR is restricted or prohibited by NOTAM because of a NAVAID (VOR, TACAN, NDB, compass locator, or DME) outage, the NOTAM does not apply to aircraft equipped with suitable global positioning system (GPS) RNAV. For clarification, state the reason for the restriction in the text of the procedural FDC NOTAM.

Examples:

A DME antenna is out of service:

!FDC x/xxxx PWK IAP CHICAGO EXECUTIVE, CHICAGO/PROSPECT HEIGHTS/WHEELING, IL.
VOR RWY 16, ORIG-B...
DME MINIMUMS NA EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS, ORD DME OUT OF SERVICE.
1305011200-1312111200EST

REASON: ORD DME OUT OF SERVICE

A locator outer marker (LOM) used for procedure entry and/or missed approach clearance limit for an ILS approach is out of service:

!FDC x/xxxx ASH IAP NASHUA/BOIRE FIELS, NH.
ILS OR LOC RWY 14, AMDT 5B...
PROCEDURE NA EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS, CHERN LOM OUT OF SERVICE. 1305011200-1312111200EST

REASON: CHERN LOM OUT OF SERVICE.

A VOR is used in a departure procedure (ODP or SID) is out of service:

!FDC x/xxxx DUG ODP BISBEE-DOUGLAS INTL, DOUGLAS BISBEE, AZ.
TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES...
DEPARTURE PROCEDURE: NA EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS, DUG VOR OUT OF SERVICE. 1305011200-1312111200EST

REASON: DUG VOR OUT OF SERVICE.

(2) In certain circumstances, AFS-400 may determine that the use of RNAV systems that utilize DME/DME/inertial reference unit (IRU) inputs should be allowed. In these instances, AFS-400 will advise AeroNav Products to insert the phrase “OR DME/DME/IRU” after “SUITABLE RNAV SYSTEM WITH GPS.” Include in the NOTAM any required DME facilities, as provided by AFS-400 to support DME/DME/IRU operations.

Example:

!FDC x/xxxx LAS SID MC CARRAN INTL, LAS VEGAS, NV.
HOOVER THREE DEPARTURE...
PROCEDURE NA EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS OR DME/DME/IRU, PGS VOR OUT OF SERVICE. BLD AND DRK DME MUST BE OPERATIONAL FOR DME/DME/IRU ON PEACH SPRINGS TRANSITION. DRAKE TRANSITION NA FOR DME/DME/IRU. 1305011200-1312111200EST

REASON: PGS VOR OUT OF SERVICE.

f. When a NOTAM D removes a localizer from service, the ILS approach is unusable. If the glide slope (GS) is out, the precision approach is unusable. If other ILS components are out, the inoperative table applies. In these instances, an FDC NOTAM for the ILS approach is not required.

g. When radio control of approach lights or runway lights is commissioned or the frequency is changed, Flight Inspection issues a NOTAM D in accordance with Order 8200.1.

h. When Technical Operations personnel issue a NOTAM suspending Category II/III minimums, AeroNav Products must be notified (see Order JO 7930.2). If the suspension will exist longer than 224-days or is permanent, AeroNav Products must submit a full or abbreviated procedure amendment prior to the 224-day suspense.

2-6-8. Air Traffic Service Route NOTAMs. Under 14 CFR Part 71.13, the term "ATS route" refers to a variety of routes, including airways, jet routes, and RNAV routes. When a restriction or a change to an ATS route requires a NOTAM, AeroNav Products must prepare and forward an FDC T-NOTAM following the procedures in paragraph 2-6-4. The keyword "ROUTE" will follow the affected ARTCC identifier or the 2-letter state code if the NOTAM is contained within a single state, in the NOTAM text - see examples below.

a. NOTAMs, reflecting ATS Route changes within one or more ARTCC's airspace, are issued under the affected ARTCC identifier as Center Area NOTAM (CAN) FDC NOTAMs on the NOTAM circuit. The formats specified in Order JO 7930.2, chapter 7 must be followed regarding the number of ARTCCs and states affected.

b. ATS Route changes involving a single state and one or more ARTCCs must be issued with the ARTCC identifier followed by the two-letter state code. The two-letter state code must also follow all NAVAID and fix designators.

Examples:

!FDC x/xxxx ZFW OK ROUTE ZFW ZKC.
V140 SAYRE (SYO) VORTAC, OK TO TULSA (TUL) VORTAC, OK MEA 4300.
1305011200-1312111200EST

!FDC x/xxxx ZKC OK ROUTE ZFW ZKC.
V140 SAYRE (SYO) VORTAC, OK TO TULSA (TUL) VORTAC, OK MEA 4300.
1305011200-1312111200EST

REASON: TEMPORARY NEW TOWER, OE 12-ASW-0123.

c. If the ATS Route NOTAM affects one, two, or three ARTCCs and multiple states, issue a separate NOTAM for each affected ARTCC. Do not include two-letter state codes if more than one state is involved.

Examples:

!FDC x/xxxx ZAB ROUTE ZAB ZKC.
V12-V280 PANHANDLE (PNH) VORTAC, TX TO GAGE (GAG) VORTAC, OK MOCA 5000. 1305011200-1312111200EST

!FDC x/xxxx ZKC ROUTE ZAB ZKC.
V12-V280 PANHANDLE (PNH) VORTAC, TX TO GAGE (GAG) VORTAC, OK MOCA 5000. 1305011200-1312111200EST

REASON: NEW CONTROLLING OBSTACLE: 352536.26N/1013119.72W, 389 AGL/3932 MSL. OE 12-ASW-0369.

d. If the NOTAM affects four or more ARTCCs, send one NOTAM using "FDC" as the facility identifier.

Example:

!FDC x/xxxx FDC ROUTE ZBW ZNY ZDC ZJX.
V1 HARTFORD (HFD) VORTAC, CT TO CRAIG (CRG) VORTAC, FL MEA 4000. 1305011200-1312111200EST

REASON: REDESIGNATION OF CONTROLLED AIRSPACE.

e. If the restriction will exceed the 224-day time limit, see paragraph 2-6-3a for required action.

2-6-9. FDC NOTAMs for Special Instrument Approach Procedures (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. The NES will provide immediate feedback as to whether the location is included in the NOTAM system. There are four possible considerations to determine FDC NOTAM action for Specials.

a. If the Special *is* maintained by AeroNav Products and the location *is* in the United States NOTAM system, then procedures for NOTAM processing by AeroNav Products will be similar to the procedures used for public, 14 CFR Part 97 instrument approach procedures. When preparing the NOTAM for submission, include the keyword "Special" immediately following the three or four character location identifier [see paragraph 2-6-10 for an example]. AeroNav Products will notify the Regional NextGen Branch (RNGB) as soon as practicable.

b. If the Special *is not* maintained by AeroNav Products and the location *is* in the United States NOTAM system, then the non-FAA service provider responsible for maintaining the procedure will notify the applicable RNGB of the change/outage. The RNGB will contact AeroNav Products with the information, who will take appropriate NOTAM action. If the RNGB cannot be immediately contacted and the condition is critical to flight safety, contact the AeroNav Products 24/7 NOTAM Center, provide the necessary information, and request they initiate immediate NOTAM action. The organization responsible for maintaining the procedure is responsible for notifying the RNGB of the action taken as soon as practicable.

Note: After duty hours, contact the stand-by AeroNav Products representative at (405) 954-8260.

c. If the Special *is* maintained by AeroNav Products and the location *is not* in the United States NOTAM system, then AeroNav Products will notify the applicable RNGB of the change/outage. The RNGB must contact the user(s) of the procedure to disseminate appropriate action (e.g., NA the procedure, raise applicable minimums, etc.).

d. If the Special *is not* maintained by AeroNav Products and the location *is not* in the United States NOTAM system, then the non-FAA service provider responsible for maintaining the procedure will notify the applicable RNGB of the change/outage. The RNGB must contact the user(s) of the procedure to disseminate appropriate action; e.g., NA the procedure, raise applicable minimums, etc.

2-6-10. NOTAM Content.

a. FDC SIAP and Textual Departure NOTAMs must identify the procedure being amended and the current amendment number. NOTAMs for graphic ODPs, SIDs, and STARs must reflect the current procedure identification, including number. The NOTAM must be as concise as possible, and must *not* contain information that could be published at a later date by a routine amendment unless that information is pertinent to this NOTAM. For example, changes to the touchdown zone/airport elevations that do not affect visibility minimums, do not require NOTAM action.

b. The issuing authority must prepare the NOTAM using plain language text and those contractions found in Order JO 7340.2, Contractions, and those contractions and abbreviations used on IFP charts. Specialists must keep in mind that the NOTAM is directed to the pilot, and should be worded so that the intended change will not be misinterpreted. Avoid the use of internal cartographic instructions that have no meaning to pilots. Spell out NAVAID names in clear text followed by the identifier. If it appears that the NOTAM length will exceed 20 lines, call the USNOF at (888)-876-6826 for assistance and guidance (see Order JO 7930.2).

c. For temporary obstructions, include the type, elevation, distance, and direction from the airport or runway threshold, as appropriate, as the last line of the NOTAM text. Do not preface this information with "Chart:"

d. Include a reason for the NOTAM following the NOTAM text. This information will not be transmitted as a part of the NOTAM text, but will inform the NFDC and the USNOF of the basis for the NOTAM. It will also ensure the data is retained in the NOTAM historical files.

e. IAP, ODP, SPECIAL, SID, and STAR FDC NOTAM Examples:

!FDC x/xxxx ORD IAP CHICAGO O'HARE INTL, CHICAGO, IL.
VOR RWY 22R AMDT 8B...
MDA 1400/HAT 750, VIS 1-1/2 ALL CATS. TEMPORARY CRANE 1100 MSL 1.2 NM SE OF RWY 23 (Note: Specify distances less than 1 NM in feet.). 1305011200-1312111200EST

REASON: TEMPORARY CRANE FOR 180 DAYS. OE 08-AGL-0689

!FDC x/xxxx GPT IAP GULFPORT-BILOXI INTL, GULFPORT, MS.
VOR RWY 31 AMDT 18...
S-31 MDA 720/HAT 693 ALL CATS. VIS CAT C 2, CAT D 2-1/2. CIRCLING MDA 720/HAA 692 ALL CATS. VIS CAT C 2, CAT D 2-1/2. TEMPORARY CRANE 410 MSL 4,375 FT SE OF RWY 31.
THIS IS VOR RWY 31 AMDT 18A. 1305011200-PERM

REASON: TEMPORARY CRANE FOR 1 YEAR. OE 08-ASO-0101

FDC x/xxxx LAN IAP CAPITAL CITY, LANSING, MI.
ILS RWY 10R AMDT 8A...
CIRCLING MDA 1420/HAA 559 ALL CATS.
THIS IS ILS RWY 10R AMDT 8B. 1305011200-PERM

REASON: NEW BUILDING, 1115 MSL. OE 08-AGL-0123

FDC x/xxxx AXH IAP HOUSTON-SOUTHWEST, HOUSTON, TX.
NDB RWY 28 AMDT 4...
CHANGE ALL REFERENCE TO RWY 10-28 TO RWY 9-27. THIS IS NDB RWY 27 AMDT 4A. 1305011200-1312111200EST

REASON: RUNWAYS RENUMBERED FOR MAGNETIC VARIATION CHANGE.

!FDC x/xxxx HIE ODP MOUNT WASHINGTON REGIONAL, WHITEFIELD, NH
TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES...
TAKEOFF MINIMUMS: RWY 10, NA. RWY 28, 2700-3 WITH A MINIMUM CLIMB OF 340 FT PER NM TO 4400. DEPARTURE PROCEDURE: RWY 10, NA. RWY 28, CLIMB DIRECT GMA NDB, CLIMB IN HOLDING PATTERN (W, RIGHT TURNS, 104 INBOUND) TO 5300 BEFORE PROCEEDING ON COURSE. ALL OTHER DATA REMAINS AS PUBLISHED. 1205011200-1212111200EST

REASON: PERIODIC REVIEW. PROCEDURE UPDATED TO MEET CURRENT POLICY/CRITERIA.

!FDC x/xxxx BCE ODP BRYCE CANYON, BRYCE CANYON, UT.
TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES.
BRYCE ONE DEPARTURE (RNAV): PROCEDURE NA. 1305011200-1312111200EST

REASON: AWAITING CONTROLLED AIRSPACE RULEMAKING

!FDC x/xxxx PAJN SPECIAL JUNEAU INTERNATIONAL, JUNEAU, AK.
LDA X RWY 8 AMDT 9…
PROCEDURE TURN NA. 1305011200-1312111200EST

REASON: PROCEDURE TURN (PT) STEP-DOWN FIX GREATER THAN 4 NM FROM PT FIX.

!FDC x/xxxx DFW SID DALLAS-FORT WORTH INTL, DALLAS-FORT WORTH, 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. 1305011200-1312111200EST

REASON: TO SEPARATE SID FROM THE CEOLA DEPARTURE AND CHANGE 240L TO READ 240 KT.

!FDC x/xxxx DCA STAR WASHINGTON/RONALD REGAN 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 AEMEL (AML) VORTAC. 1305011200-1312111200EST

REASON: ATC ROUTING RESTRICTION.

Note: See paragraph 2-6-5d for SIDs and STARs that serve multiple airports.

Section 2-7. Quality/Standardization of Instrument Flight Procedures

2-7-1. AeroNav Products Action.

a. AeroNav Products is responsible for the accuracy of instrument flight procedures it develops, and for establishing and conducting a system of quality control that ensures such procedures conform to applicable criteria, standards, and policy.

b. AeroNav Products' system of quality control must ensure that all flight procedures and NOTAMs submitted to NFDC are of a professional quality that will not require corrections or changes following release.

c. When unusual circumstances exist, for which policy is not clear or is nonexistent, request a policy determination from AFS-460 prior to submission for publication. Appropriate instructions will be issued as necessary.

d. Instrument charts produced by AeroNav Products must be reviewed for variations from information submitted for publication and for clarity of the graphic portrayal. Charting errors detected must be immediately corrected by NOTAM (see chapter 2, section 2-6). Charts that do not clearly portray the procedure(s) as designed should be referred to AFS-460 and AeroNav Products, Quality Assurance and Standards Team, with recommendations for charting improvements.

2-7-2. AFS-460 Action.

a. AFS-460 is responsible for providing oversight of non-FAA service provider's Quality Assurance (QA) process to determine conformance with applicable criteria, standards, and policy.

b. Preliminary reviews may be conducted by AFS-460 upon request of a non-FAA service provider. When unusual circumstances exist, appropriate instructions will be issued to AeroNav Products as necessary.

Section 2-8. Periodic Review of Instrument Flight Procedures

2-8-1. General.

a. This section prescribes the minimum frequency of review of instrument procedures. When deemed necessary, and in the interest of safety or for other proper justification, make more frequent reviews. Review all instrument procedures to ensure that requirements for obstacle clearance, navigational guidance, safety, and practicality are met. When directed by Flight Standards, immediately comply with changes to criteria. Use the review to determine if the procedure must be amended to support changes to new/revised criteria and policy. These changes include, but are not limited to such items as obstacle assessment areas (i.e., to ensure proper Obstacle Evaluation (OE) actions are being administered), procedure naming, requirements to add/remove/ modify chart notes, etc. Consideration must also be given to the impact of OEs, facilities and equipment (F&E), and AIP projects pertinent to the procedure review process. Reviews will be completed within the timeframes specified in paragraph 2-8-2. Document all required changes, including criteria/policy and how they affect the current procedure during the review.

b. The date for determining when a periodic review is due is based on the procedure original or last full amendment "Approved By" date indicated on the applicable 8260-series form. Subsequent periodic reviews must be based on the completion date documented for the previous periodic review. An abbreviated amendment (because "No" was checked in the "All Affected Procedures Reviewed" box) and P-NOTAM dates must not be used in calculating periodic review requirements.

c. A periodic review is considered complete if it occurs in the period from one month prior to one month after the month in which the periodic review is due; e.g., if the periodic review is due in July, the window is June 1 to August 31. If the window is met, the month it is due remains unchanged. However, if the periodic review occurs outside of the specified window, the next review is due in the month in which the review was actually completed.

d. Document periodic reviews to show the date when review was conducted and include a synopsis of review results based on items mentioned in paragraph 2-8-2, specifying what action, if any, was taken. The method (spreadsheet, memorandum, etc.) used to document the periodic review is at the discretion of the procedure development authority.

Example:

NEED TO APPLY CURRENT RULE OF VEGETATION/AAO TO ALL RUNWAYS. RWY 4: REQUIRES A TEXTUAL DEPARTURE PROCEDURE CLIMB HEADING 040.51 TO 1500 BEFORE TURNING LEFT DUE TO NEW OBSTRUCTION IN DIVERSE A AREA 55-000821. RWY 22: SATISFACTORY. RWY 9: SATISFACTORY. RWY 27: PREVIOUSLY DOCUMENTED ICA OBSTRUCTION IS NOT IN THE DATA BASE. MAP STUDY SHOWS IT APPEARS TO BE STILL THERE AND ORS TEAM CONTACTED. OBS EVALUATED AT 4D WHICH REQUIRES NEW CLIMB GRADIENT. TRUE COURSE ON AIRNAV APPEARS TO BE INCORRECT AND EMAIL SENT TO FPT TO VALIDATE. NOTAM ISSUED FOR RWY 4 DIVERSE DEPARTURE AND RWY 27 CLIMB GRADIENT.

e. When facility restrictions are established or changed, review all associated flight procedures. Take particular care to evaluate unpublished procedures such as off-airway, direct, and substitute routes.

2-8-2. Reviewing Organization Action.

a. SIAPs, SIDs, ODPs, DVAs, and STARs.

(1) Review at least once every two years.

(2) Review all feeder, initial, intermediate, final, circling, missed approach, and departure procedure areas for any changes that would affect flight altitudes. To avoid proliferation of conflicting data on IFPs at an airport, all other procedures at the airport must be considered for possible impact and revision(s), when applicable [see paragraph 8-3-2a].

(3) Ensure that all procedures are contained within controlled airspace as prescribed in chapter 5.

Note: New Circling criteria dimensions may require a revision to controlled airspace boundaries.

(4) Ensure that minimums meet criteria. Review IFP forms for conformance to current standards. Check published IFP charts and text for correct portrayal.

(5) Verify current magnetic variation values.

(6) Verify continued need for IFPs based on usage rate, economic need, etc. Cancel IFPs that are no longer required.

(7) Verify the validity of existing waivers. Cancel waivers no longer required.

(8) If the results of the review indicate a need to amend an IFP, coordinate proposed changes (including FDC NOTAMs) in advance with the applicable OSG-FPT. The FPT will coordinate with airport management, the RAPT and servicing air traffic control facility when application of new or revised criteria raises minimum procedure altitudes and/or increases landing minimums. The FPT must be provided a copy of the documentation required by paragraph 2-8-1d.

b. Airways, Airway Segments, and Routes.

(1) Review at least once every four years.

(2) Verify controlling obstacles and assure that authorized altitudes meet obstacle clearance requirements. Use current en route charts as airway checklists.

(3) Verify continued need for off-airway and 14 CFR Part 95 direct routes. Cancel routes that are no longer required.

c. Fixes.

(1) Review all fixes in conjunction with the associated IFPs, airways, or routes [see section 2-10]. Assure that Form 8260-2, Radio Fix and Holding Data Record, entries for facility type, class, radial/course/bearing, distances, and charting requirements are correct. Verify holding requirements and controlling obstructions.

(2) Cancel fixes and holding which are no longer needed.

d. All Procedures.

(1) Establish and maintain a system of control to assure that reviews are accomplished.

(2) Take remedial action by NOTAM or revised 8260-series form.

(3) Review all associated waivers in conjunction with any procedure review.

(4) Annotate and incorporate editorial changes noted during the review in the next revision. Do *not* make IFP amendments solely to correct an MSA altitude except when the MSA provides less than 950 feet of obstacle clearance.

Section 2-9. Communications and Weather

2-9-1. Communications Requirements. Order 8200.1, chapter 8, defines communication tolerances and flight inspection procedures. Even though gaps in navigation course guidance may be approved, reliable communications coverage over the entire airway or route segment at minimum en route IFR altitudes must be available.

a. Minimum En Route Altitudes (MEAs) or Maximum Authorized Altitudes (MAAs) are predicated upon continuous approved communications capability for the entire designated segment. All available resources must be explored before restricting the use of altitudes of an airway or route due to a lack of acceptable communications coverage. Coordination must be effected with ATC for determination of the acceptability of communications coverage in a particular area.

b. Mandatory communications with the appropriate ARTCC are not required; communications with other ATC facilities are allowable. Where necessary, in order to provide direct communications with a center, appropriate recommendations for a peripheral site should be made.

c. Communications requirements for non-14 CFR Part 95 routes certified for a particular air carrier are the responsibility of appropriate Flight Standards Division Office (FSDO) operations inspector.

2-9-2. Use of UNICOM. UNICOM may be used to satisfy the communications requirements of Order 8260.3, Volume 1, paragraph 122e; however, there are limitations on its use that must be considered. According to FCC Rules and Regulations, Part 87, Subpart C, UNICOM stations are not authorized for ATC purposes other than the relay of the following information between the pilot and controller:

a. Revision of proposed departure time.

b. Time of takeoff, arrival, or flight plan cancellation.

c. ATC clearances PROVIDED a Letter of Agreement is consummated by the licensee of the advisory station (UNICOM) with the FAA.

d. Weather information - only if there is no FAA control tower or Flight Service Station, or during periods when an FAA unit is not in operation. Direct transmission of approved altimeter setting to the pilot is authorized provided the procedure states an alternate course of action if UNICOM is not contacted.

Note: FCC regulation places the responsibility for the Letter of Agreement on the licensee, but Order JO 7210.3 suggests that an ATC facility prepare the agreement. A communication capability between the UNICOM station and ATC is necessary to meet requirements of Order 8260.3, Volume 1, paragraph 122e.

2-9-3. Automatic Altimeter Setting and Weather Reporting Systems. Approved devices for automatically reporting altimeter settings and weather may be used to satisfy the requirements of

Order 8260.3, Volume 1, paragraph 122d. Special notes will be required on the approach charts. Examples of standard notes can be found in paragraph 8-6-5f.

Section 2-10. Navigational Fixes

2-10-1. General. Criteria for navigational fixes are contained in Order 8260.3, Volume 1, chapters 2 and 17. When using a VORTAC or VOR/DME, fixes should be defined by DME from the facility providing course guidance in addition to radials or course intersections.

2-10-2. Reporting Points. Reporting points are established for use by the Air Traffic Organization (ATO) in the movement and separation of aircraft. Reporting points are divided into two categories, which are:

a. Compulsory reporting points are designated by regulation and, therefore, require rule-making action. It is the ATO's responsibility to initiate airspace rule making action for the designation of compulsory reporting points. Unless the reporting point can be identified at the lowest operational altitude, it must not be designated a compulsory reporting point.

b. Non-Compulsory reporting points may be established by the ATO without the requirement for rule making action.

2-10-3. Unplanned Holding at Designated Reporting Points.

a. Where required for aircraft separation, ATO may request aircraft to hold at any designated reporting point in a standard holding pattern at the MEA or minimum reception altitude (MRA), whichever altitude is the higher, at locations where a minimum holding altitude has not been requested. For this reason, the conditions to be considered for holding (obstacle clearance, communications, and facility performance) must be reviewed whenever reporting points are established or revised, even though specific holding authorization has not been requested by the ATC facility.

b. Unplanned holding at en route fixes may be expected on airway or route radials, bearings, or courses. If the fix is a facility, unplanned holding could be on any radial or bearing. Where standard holding cannot be accomplished at the MEA or MRA, any necessary limitations must be clearly indicated on Form 8260-2.

2-10-4. Requests for Navigational Fixes.

a. Form 8260-2 is the vehicle used to transmit requests for the establishment, revision, or cancellation of navigational fixes, holding patterns, and/or reporting points. All fix requests must be processed to the NFDC, AJV-21, for publication in the NFDD. See section 8-5 and appendix D for guidance on filling out Form 8260-2 and requesting additions/deletions to existing fixes that are under the control of a different Office of Responsibility (OPR).

(1) AeroNav Products is responsible to initiate and maintain Form 8260-2 for those navigational fixes that are required for the development of all 14 CFR Part 95 routes and those 14 CFR Part 97 FAA developed and maintained instrument procedures for which they are responsible.

(2) The requesting ATC facility is responsible for initiating and maintaining (i.e., update the Form and process changes when they occur) a Form 8260-2 on those ATC

operationally required navigational fixes including Charted Visual Flight Procedures (CVFPs). The requesting ATC facility is responsible for coordinating with adjacent ATC facilities as deemed necessary, and then processing the form through the appropriate Service Center OSG-FPT to NFDC. A Form 8260-2 submitted with a request for Area Navigation Visual Flight Procedures (RVFPs) also require OSG-FPT approval and submission to NFDC.

(3) "Service Providers," also referred to as "non-FAA service providers," of instrument flight procedures are responsible for initiating and maintaining the Form 8260-2 for those fixes that will not be used by the FAA on other instrument or air traffic procedures. These Form 8260-2s must be submitted to AFS-460 with the instrument procedure package, prior to forwarding to NFDC. See appendix D for processing guidelines when using an existing fix that has an FAA OPR.

(4) The DoD is responsible for initiating and maintaining the Form 8260-2 for those fixes that are for DoD operations that are not a part of a 14 CFR Part 95 route and/or 14 CFR Part 97 instrument flight procedure.

(5) Transferring OPR to AeroNav products is required when a fix used solely for ATC purposes or in a non-FAA service provider developed procedure, or DoD fix is re-designated for use in an FAA developed instrument flight procedure. When this occurs, AeroNav Products will generate a new Form 8260-2 showing them as the OPR for that fix.

(6) All OPRs are responsible for coordinating any fix/holding pattern changes with all organizations that are responsible for procedures identified under "Fix Use." In order to prevent extensive, costly and time consuming procedure changes, fix movement and/or changes to holding patterns, or cancelations must not occur until all affected fix users have agreed to the change.

b. Every effort should be made to use established fixes or NAVAIDs wherever possible in lieu of creating new fixes. Do *not* create a new waypoint over an existing fix or NAVAID. Do not use any VOR/DME or VORTAC where the VOR coordinates and DME source coordinates are not identical to 0.01 second in required navigation performance (RNP) authorization required (AR) procedures. Additionally, when establishing new fixes that will be placed on Victor Airways or Jet Routes solely to support RNAV instrument procedures, define them only as Waypoints. However, if ATC has determined they would also like to use the fix for ATC purposes, consideration must be given to the potential use by non-RNAV equipped aircraft, thus fix makeup must consist of ground based NAVAID systems and "Fix Type" on Form 8260-2 annotated accordingly. Additionally, if ATC uses an existing fix for ATC purposes, Form 8260-2 must be updated accordingly. See paragraph 8-5-2j.

2-10-5. Naming Navigational Fixes. In order to satisfy the requirements of the Flight Management System (FMS), the following applies for all procedures:

a. All Navigational Fixes must be Named. Exceptions: Fixes used for navigation not to be named include Visual Descent Points (VDPs), radar fixes used on airport surveillance radar (ASR) and/or precision approach radar (PAR) procedures, RNAV missed approach point at threshold, and an along-track distance (ATD) fix located between the MAP and the landing area marking the visual segment descent point on COPTER RNAV point-in-space (PinS) approach annotated “PROCEED VISUALLY.” Additionally, do not name Lead Radials, Bearings, or DMEs. Except as noted below, each name must consist of a 5-letter pronounceable word. Obtain 5-letter names from NFDC. Name fixes collocated with a facility (named in accordance with Order JO 7400.2, Procedures for Handling Airspace Matters) retains the same name as the facility. Navigational fixes to be named include:

(1) Intersections defined by radials and/or bearings.

(2) DME and ATD fixes.

(3) Stepdown fixes, regardless of segment in which located. Stepdown fixes between the FAF and MAP may be non-pronounceable 5-letter names.

(4) MAP not located at the threshold of the landing runway. This may be a non-pronounceable 5-letter name. For non-RNAV procedures, if DME is available, it should be a DME fix. If DME or other ground-based NAVAID solution is not available, define the MAP with a Computer Navigation Fix (CNF).

Note: If a CNF is used to define the MAP on a non-RNAV procedure, FAF to MAP timing is required.

(5) Starting and ending points of arcs.

(6) Points where feeder or initial routes intercept the final approach course extended prior to the initial or intermediate fix. This includes cases where the intercept is via a heading. These are developed as computer navigation fixes.

(7) RNAV Waypoints.

(8) Computer Navigation Fixes (CNFs). These are non-pronounceable 5-letter fix names used to aid in computer navigation and are not used in ATC communications. CNF's are documented on 8260-Series Forms and charted (as applicable) in parentheses and will normally begin with the letters “CF” followed by 3-consonants; e.g., “(CFWBG)”, except the letter “Y” will not be used.

Note: Earlier versions of CNF's include any combination of 5-letter non-pronounceable fix names. Currently “charted” CNF’s that do not meet the “CFXXX” naming methodology must be converted to meet this standard when identified at the next periodic review or scheduled Amendment, whichever occurs first.

(9) Fictitious Threshold Point (FTP). This is a CNF.

(10) VFR Waypoints. These are non-pronounceable 5-letter names beginning with “VP” and are not to be used on RNAV Visual Flight Procedures. Example: VPXYZ

(11) Precise final approach fix (PFAF) not collocated with a FAF that is separated by 1 nautical mile (NM) or greater shall be a pronounceable, 5-letter name.

b. Coordinate with NFDC and the appropriate ARTCC when a fix name change is required. Document the change on Form 8260-2. Canceled fix names must be reserved again at NFDC and cannot be re-used until six months after cancellation.

c. When a fix must be moved, refer to Order JO 7400.2, Procedures for Handling Airspace Matters, for guidance on whether the 5-letter name may be retained or must be changed.

2-10-6. Documenting Navigational Fixes.

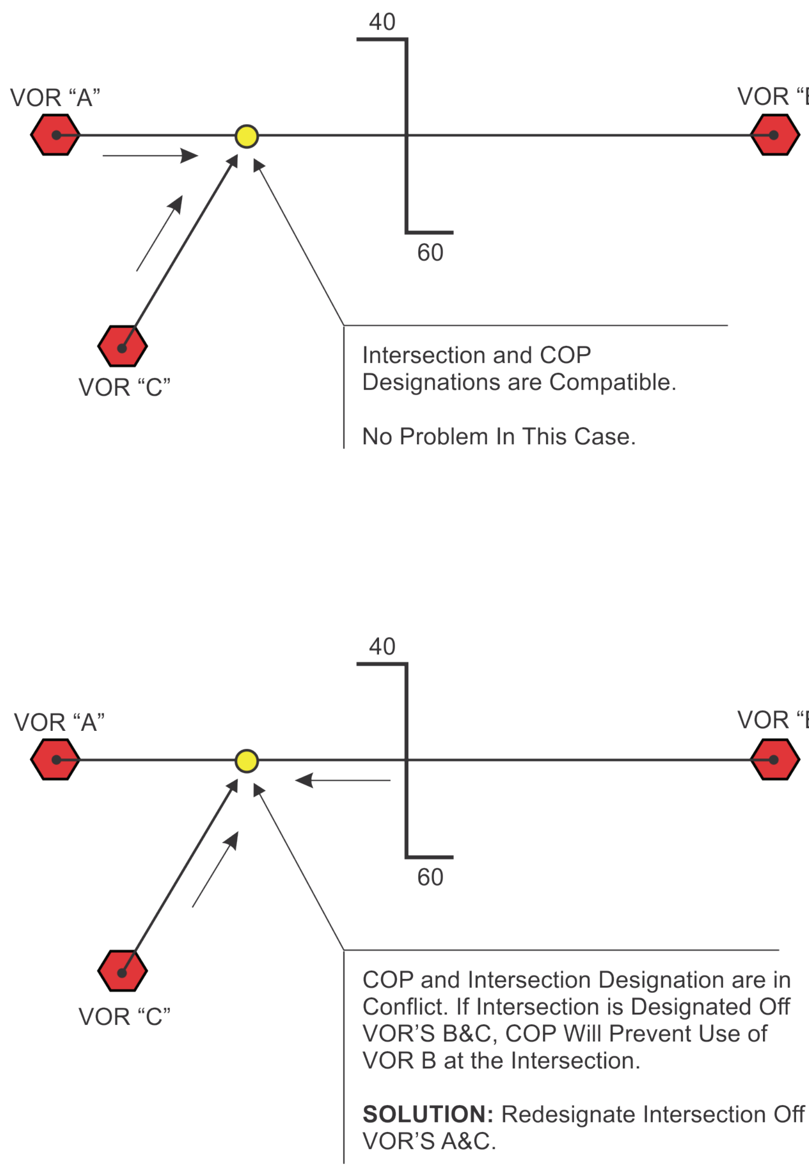
a. All named civil and military fixes must be documented and approved on Form 8260-2. Chapter 8 of this order contains instructions for entering data and submitting Form 8260-2.

b. Military fixes are also maintained in the National Database and are used to support the air traffic system. Therefore, the requirement to document and flight inspect military fixes must receive the same priority as the fixes that support civil procedures.

2-10-7. Correlation of Navigational Fixes and Changeover Points (COPs). The designation of navigational fixes should be directly related to COPs. Care should be taken to avoid designating navigational fixes that require the use of a facility beyond the COP. Figure 2-10-1 is an example of the proper and the improper method of designating a navigational fix in relation to COPs.

Note: These diagrams illustrate a problem encountered when handling intersections and changeovers. Make certain the entire complex is reviewed to prevent establishing procedures that are in conflict with the usability of the facilities involved.

Figure 2-10-1. Proper and Improper Method of Designating a Navigational Fix



2-10-8. Minimum Reception Altitudes. At certain navigational fixes, VOR reception from an off-course facility may not be adequate at the lowest MEA associated with the route segment. In such cases when the MRA at the fix is higher than the MEA for instrument flight, the MRA must be established for the fix and indicated on Forms 8260-2 and 8260-16. Once established, an MRA will not be revised unless the reception altitude is changed by 200 feet or more [see paragraph 8-5-2g(3)(j)].

2-10-9. Flight Inspection. After completion of required coordination, flight inspection personnel must confirm facility performance at the proposed operational altitudes. Where possible, determinations are to be predicated on current facility performance records; otherwise, a flight check must be accomplished.

2-10-10. Maximum Authorized Altitudes. MAAs are procedural limits that might be determined by technical limitations or such other factors as limited airspace or compatibility with other procedures. Where MAAs are required in connection with the publication of flight procedures, they are included on Forms 8260-2 and 8260-16, or worksheets used to process the data [see also paragraph 8-5-2g(3)(k)].

Section 2-11. Obstacle Data

2-11-1. General. The primary purpose of obstacle evaluation is to determine how an object will affect instrument flight procedures. The evaluations provide accurate, consistent, and meaningful results and determinations only if procedure specialists apply the same rules, criteria, and processes during development, review, and revision phases. This section also provides basic information regarding obstacle data sources; establishes the minimum accuracy standards for obstacle data and its application in the development, review, or revision of instrument procedures; and provides information on the application of the minimum accuracy standards. The minimum standards, regardless of the data source, are to be applied by instrument procedure specialists in all instrument procedure obstacle evaluations.

2-11-2. Obstacle Data Sources.

a. The Aeronautical Information Management Office (AIM), Geographic Services Group maintains a Digital Obstacle File (DOF) that includes a record of all as-built manmade obstructions reported under 14 CFR Part 77. It also includes records of manmade obstructions reported through various other sources; e.g., AeroNav Products, Flight Inspection, the Federal Communications Commission (FCC), Airports Geographic Information System (GIS), Third Party Survey System (TPSS), and the Obstruction Evaluation/Airport and Airspace Analysis (OE/AAA) program. The Geographic Services Group will provide obstacle data as necessary for procedure development under current AIM internal standard operating procedures. The Geographic Services Group will provide obstacle data to other FAA offices on a time available basis. Requests for obstacle data should identify the DOF Obstacle Repository System (ORS) code and obstacle number; e.g., 01-00103, the area desired by geographical coordinates or a specified radius from an ARP or navigation facility and should be accompanied by any source and/or survey documentation available.

b. Absence of obstacle data in an electronic database and/or lack of survey data specified in AC 150/5300-13, Airport Design, do not preclude development of an instrument procedure. Lack of survey data may not permit lowest possible minima.

2-11-3. Obstacle Data Accuracy Standards. This paragraph identifies the *minimum* requirement for accuracy of obstacle data used in the development of minimum vectoring altitudes (MVA)/minimum IFR altitude (MIAs) and instrument procedures; providing the minimum accuracy standards for each.

a. Concept. Obstacle data accuracy is not absolute, and the accuracy depends on the data source. The magnitude of the error does not preclude the use of these data, provided it is identified and accounted for. In some cases, upgrading obstacle accuracy can provide relief from operational restrictions in an instrument procedure. This will allow expenditure of funds for obstacle surveys in areas where benefit to the aviation community would result. In no case; however, will the application of obstacle data accuracy preempt the requirement for the flight check of an instrument procedure for discrepancies. For sources of obstacle data accuracy, see appendix C.

b. Standards. The minimum accuracy standards in this order are for use in the development, review, and revision of instrument procedures. They must be applied to all new procedures and to existing procedures at the next revision or periodic review, whichever occurs first. The minimum accuracy standards are listed in paragraphs 2-11-3b(1) through (5). *Adjust* the location/elevation data of the segment-controlling obstacle by the amount indicated on the assigned accuracy code *only*, if that assigned code does not meet or exceed the following standards. For example, if the nonprecision final segment controlling obstacle has an assigned accuracy code 4D, adjust its location data by +250 feet laterally, and its elevation data by +50 feet vertically; this is because 4D does not meet or exceed the minimum accuracy requirement of +50 feet horizontal and +20 feet vertical (2C) applicable to the nonprecision final segment.

(1) +20 feet horizontal and +3 feet vertical accuracy (1A). Precision and APV final and missed approach segments.

(2) +50 feet horizontal and +20 feet vertical accuracy (2C). Nonprecision final segments; missed approach 40:1 surface evaluation; circling areas; VCOA level surface; and the initial climb area (ICA) for all DPs.

(3) +250 feet horizontal and +50 feet vertical accuracy (4D). Intermediate segment. For DPs: all areas outside of the ICA.

(4) +500 feet horizontal and +125 feet vertical accuracy (5E); [1000 feet ROC and Special required obstacle clearance (ROC) {e.g., MVA/MIA reduced ROC in mountainous areas}]; (non-mountainous). Initial segments; feeder segments; en route areas; DPs and missed approach holding/level surface evaluation; MSA; ESA; MVA; EOVM; MIA; DF Vector Areas. For SIDs: level route portion.

(5) +1000 feet horizontal and +250 feet vertical accuracy (6F); (2000 feet ROC) (mountainous). Feeder segments; en route areas; ESAs; MVA; EOVM; MIA; DF Vector areas. For SIDs: level route portion.

(6) If it is determined that the horizontal and/or vertical uncertainty adjustment associated with the controlling obstacle must be applied, application must be in the most critical direction; e.g., applied in the horizontal and/or vertical direction which most adversely affects the procedure.

(7) If the controlling obstacle elevation plus accuracy code adjustments affects a minimum altitude or gradient, and a higher order of accuracy could reduce an adverse operational effect, then take action to have the accuracy improved; or adjust the procedure accordingly [see paragraph 2-11-4].

(8) Take no further action if the controlling obstacle elevation plus accuracy code adjustment does not affect a SIAP minimum altitude or gradient.

(9) AeroNav Products, in coordination with the Air Traffic Organization, must determine the accuracy standard to apply in the evaluation of a proposed obstruction, and to apply in the development/revision of any affected procedures.

c. Automated Obstacle Database. The obstruction database file contains obstacle location and elevation data. The data contains both verified and unverified obstacles. Discrepancies in the obstacle database found in the development, review, and revision of instrument procedures must be identified to AeroNav Products. Obstacles contained in the Digital Obstruction File (DOF) marked as "Dismantled" are not to be used in obstacle assessment of instrument procedures.

2-11-4. Accuracy Standards Application. Adjust the instrument procedure to meet the requirements of the minimum accuracy standards. When an altitude adjustment is required which would adversely affect the procedure minimums, evaluate the nature, magnitude, and rationale for the adjustment; and then review records to identify an existing source validating a higher level of accuracy that could preclude the need for adjustment. Where the review fails to produce an improved accuracy source, notify the appropriate Airports Division for assistance relative to existing obstructions; or notify the appropriate Air Traffic Organization office when the review involves a proposed structure or modification to an existing structure being studied in the OE program. AeroNav Products need not delay further processing of affected procedures pending receipt of higher-level accuracy data *only* where operationally prudent. Horizontal and vertical accuracy code adjustments must not be applied to Restricted Airspace containing tethered balloons.

a. Manual. When manually developing the procedure, identify all controlling obstacles on Form 8260-9 in coordinates to the second, and assign the highest order of accuracy known for the data source [see paragraph 8-7-1].

b. Automation. When using automation to develop the procedure, apply the accuracy standards as follows:

(1) Obstacle accuracy standards must be applied when determining the altitude(s) to be charted.

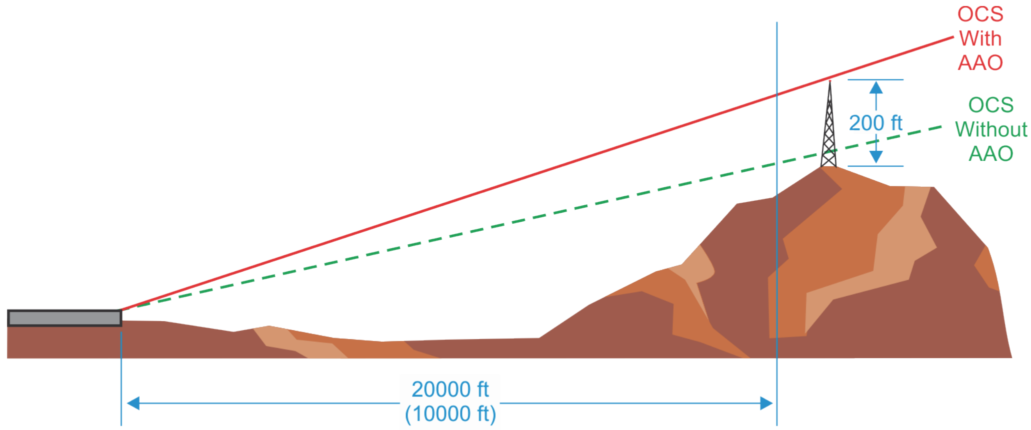
(2) If segment altitude adjustments are made to meet the requirements of the minimum accuracy standards, state the reason for the adjustment on the applicable menu.

c. Non-RNP Procedure Evaluation Sequence. In either paragraph 2-11-5b or c, first determine the controlling obstacle *using raw obstacle data only* (i.e., accuracy adjustments not applied). Then add horizontal/vertical accuracy code adjustments to the raw values to determine the obstacle's most adverse location and elevation. Accuracy code adjustment is not applied to obstacles evaluated relative to Order 8260.3, Volume 1, paragraph 289, visual portion of final and/or when evaluating the Glidepath Qualification Surface (GQS).

d. RNP Authorization Required (AR) Procedure Evaluation Sequence. Apply actual horizontal and vertical accuracy values in all obstacle evaluations; however, do not apply accuracy adjustments to obstacles in the visual portion of final or when evaluating the GQS.

2-11-5. Controlling Obstacles. Pursuant to the provisions of 14 CFR Part 77.9, an Adverse Assumption Obstacle (AAO) of 200 feet AGL is assumed to exist at and beyond a specified distance (radius) from the nearest landing surface at a given airport/helipad [see figure 2-11-1]. As applied to runways, the specified distance is dependent upon runway length [see paragraph 2-11-5a(2)]. Additionally, where airports/helipads underlie the OEA(s) of a given IFP resulting in multiple AAO exempt areas, do not apply an AAO within any exempt area. Use the following process to determine the controlling obstacle within a given procedure segment:

Figure 2-11-1. AAO Example



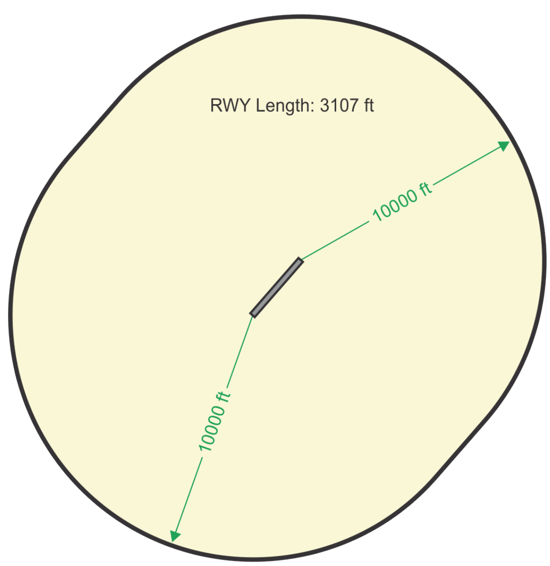
a. For each airport/helipad, establish the AAO exempted area within which 200 feet AAO is not to be considered.

(1) Scribe an arc of specified radius [see figure 2-11-2] centered on the geographical end of each runway or helipad center. As applied to runways, enclose the area by connecting a line tangent to each adjacent arc, identical to the method used to construct a TERPS circling area. The enclosed area is considered the AAO exempt area, and is not subject to 200 feet AAO consideration.

(2) AAO Exempt Area radius:

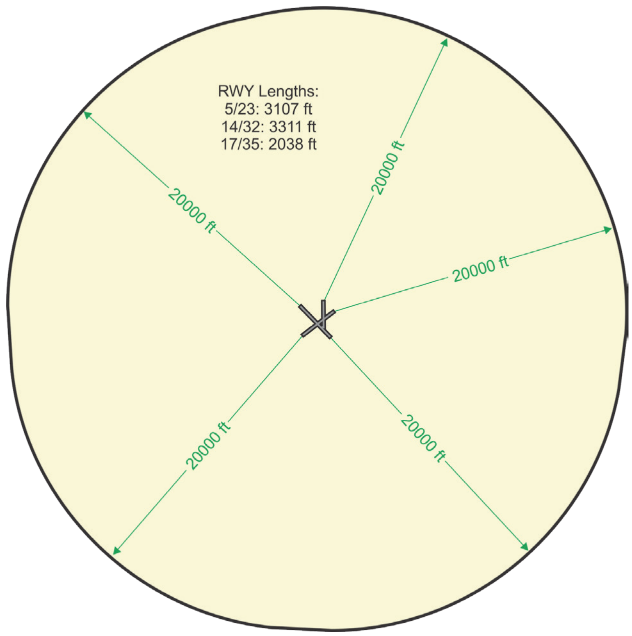
(a) No runway longer than 3200 feet: 10000 feet radius from all runway ends.

Figure 2-11-2. AAO Exempt Area, Runway Length ≤ 3200 feet



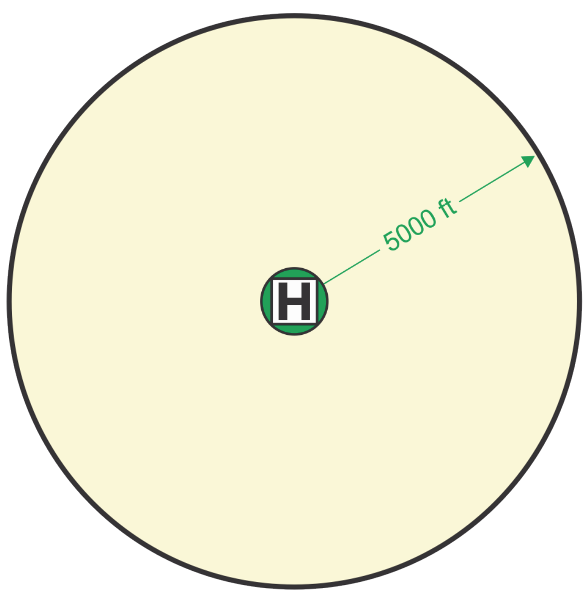
(b) One runway longer than 3200 feet: 20000 feet radius from all runway ends [see figure 2-11-3].

Figure 2-11-3. AAO Exempt Area, Runway Length > 3200 feet



(c) Helipad: For heliports with one helipad, use radius of 5000 feet from the center of the helipad [see figure 2-11-4]. When multiple helipads exist, use the center of each helipad, and then join the extremities of the adjacent arcs with lines drawn tangent to the arcs.

Figure 2-11-4. AAO Exempt Area, Helipad



(d) Helicopter (copter) Point-in-Space (PinS). For the copter PinS "Proceed VFR Transition Area," this is an AAO exempt area; however, vegetation must be considered and added to the terrain value, as appropriate.

b. Level Surface Evaluations. For all segments except precision (PA) and APV final segments, and missed approach and departure 40:1 evaluations, determine the controlling obstacle as follows:

(1) Identify the highest (MSL) database obstacle within the primary area (or secondary equivalent).

Note: As applied throughout paragraph 2-11-5, "database" is defined as all obstacle data obtained from all available sources; e.g., Obstacle Repository System (ORS), Digital Terrain Elevation Data (DTED), Digital elevation Model (DEM) data, etc.

(2) Segment portions overlying the AAO exempt area [see figure 2-11-5]:

(a) Identify the highest terrain within the primary area (or secondary area equivalent) and add worst-case vegetation height.

Exception: For runways supported by Advisory Circular 150/5300-18, General Guidance and Specification for Submission of Aeronautical Surveys to NGS: Field Data Collections and Geographic Information System (GIS) Standards, use the database; however, terrain database information, such as DTED, DEM, etc., may be inhibited for evaluation of obstacles located within the lateral confines of the Vertically Guided Approach Surface (VGAS) area specified in the survey. Outside the VGAS area, use the database and worst-case vegetation.

Figure 2-11-5. Controlling Obstacle Identification

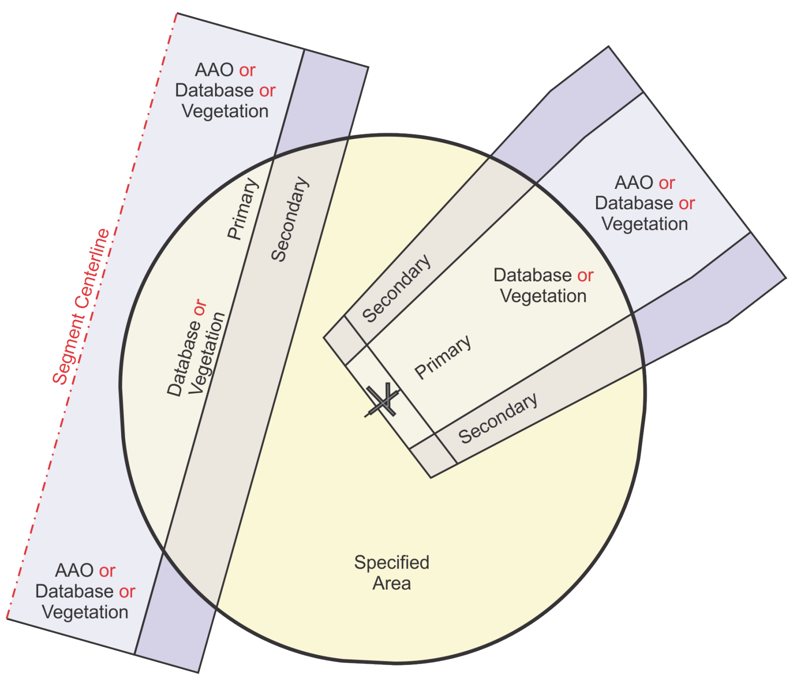
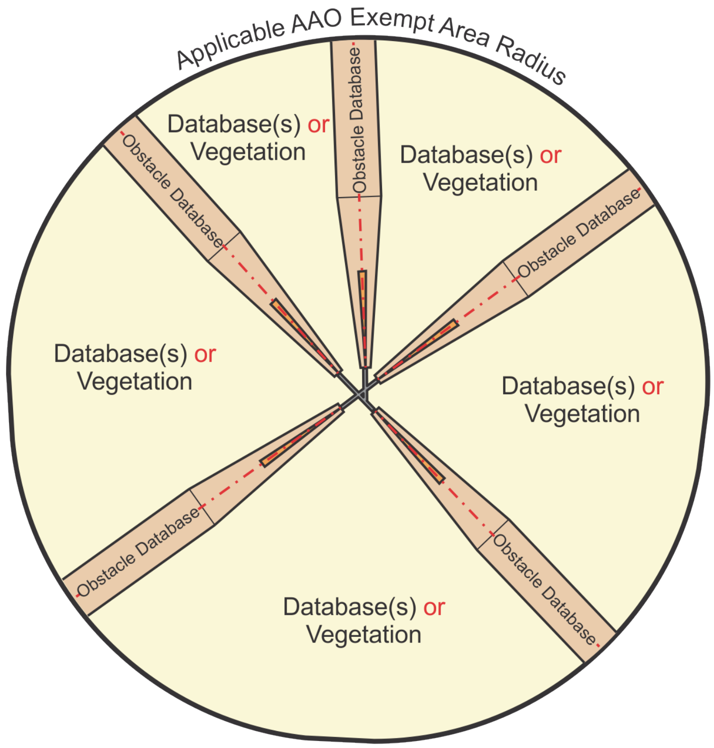


Figure 2-11-6. Controlling Obstacle Identification with AC 150/5300-18 Survey Areas



(3) Segment portions not overlying the AAO exempt area:

(a) Identify the highest terrain within the primary area (or secondary area equivalent) and add 200 feet (or worst-case vegetation height if higher).

Note: When using U.S. Geological Survey (USGS) 7 ½ minute quadrangle series topographical maps and adding an AAO to terrain (excluding vegetation additives) is necessary, the practice of adding the next higher contour line minus one unit of elevation (e.g., 20-foot contour minus one foot equals a 19-foot addition to the lower contour value, etc.) *is not* required.

(4) The controlling obstacle is the highest of the obstacles identified under paragraph 2-11-5b(1) thru (3).

c. Sloping Surface Evaluations. For PA and APV final segments, and missed approach and departure 40:1 evaluations, determine the controlling obstacle as follows:

(1) Segment portions overlying the AAO exempt area:

(a) Use the obstacle database and worst-case vegetation height to determine the controlling obstacle.

(b) **Exception:** For runways supported by Advisory Circular 150/5300-18, General Guidance and Specification for Submission of Aeronautical Surveys to NGS: Field Data Collections and Geographic Information System (GIS) Standards, use the database; however, terrain database information, such as DTED, DEM, etc., may be inhibited for evaluation of obstacles located within the lateral confines of the Vertically Guided Approach Surface (VGAS) area specified in the survey. Outside the VGAS area, use the database and worst-case vegetation.

(2) Segment portions not over-lying the AAO exempt area use the obstacle and terrain databases and 200 feet AAO (or worst-case vegetation if higher) to determine the controlling obstacle.

(3) Determine the controlling obstacle as follows:

(a) For PA and APV final segments, the controlling obstacle is that obstacle which, having penetrated the obstacle clearance surface requires the highest glidepath angle (GPA) above 3 degrees and/or causes, the most adverse decision altitude (DA).

(b) For missed approach segments, the controlling obstacle is that obstacle which, having penetrated the 40:1 OIS causes one of the following:

1. Highest DA/MDA;

2. Most adverse MAP relocation;

3. Highest climb gradient and climb gradient termination altitude (may be different obstacles).

(c) For departure areas, the controlling obstacle is that obstacle (or obstacles) which require:

1. The highest climb gradient and climb gradient termination altitude (may be different obstacles); and if applicable…

2. The most adverse ceiling and visibility to be published (may be different obstacles).

d. When an existing procedure is affected by new application of the AAO standard, see paragraph 2-8-2a(8).

2-11-6. Datums. Use the following guidance relating to geodetic datums:

a. The FAA's vertical obstruction file and airport surveys are populated with NAD-83 latitude and longitude values and elevations based on the NAVD-88 datum. These values are used in TERPS evaluation.

b. Satellite based instrument procedures should be designed and evaluated using data based on the WGS-84 datum. When developing Wide Area Augmentation System (WAAS)/Ground Based Augmentation System (GBAS) instrument procedures, the value of the landing threshold point (LTP) height above the ellipsoid (HAE) is provided in the FAA's database. These values may be referenced to the NAD-83 or WGS-84 ellipsoids. For Localizer Performance with Vertical guidance (LPV) and Ground Based Augmentation System (GBAS)

Landing System (GLS) procedures use WGS-84 height above ellipsoid (ellipsoidal height) values if available. Where WGS-84 ellipsoidal values are not available, use the NAD 83 value. NAD-83/NAVD-88 data may be considered equivalent to WGS-84 where the vertical path resulting from its use falls within the TCH tolerance of ± 3 feet. For LPV and GLS procedures only, document on the FAS Data Block Form 8260-10 the datum on which the LTP/FTP latitude and longitude and ellipsoidal height values are based.

Examples:

LTP/FTP LATITUDE (WGS-84)	332731.8700N
LTP/FTP LONGITUDE (WGS-84)	0935931.8200W
LTP/FTP ELLIPSOIDAL HEIGHT (WGS-84)	+00834
or	
LTP/FTP LATITUDE (NAD 83)	332731.8710N
LTP/FTP LONGITUDE (NAD 83)	0935931.8190W
LTP/FTP ELLIPSOIDAL HEIGHT (NAD 83)	+00836
or	
LTP/FTP LATITUDE (NAD 83)	332731.8710N
LTP/FTP LONGITUDE (NAD 83)	0935931.8190W
LTP/FTP ELLIPSOIDAL HEIGHT (WGS-84)	+00834

The LTP/FTP HAE and its reference datum must be reported on Form 8260-3/7A, for procedures developed in the CONUS. See paragraph 8-6-8l(5).

Section 2-12. Waiver of Standards/Approval Requests

2-12-1. General. The waiver request is used to officially document the nonstandard application of criteria, and serves as a means to identify criteria that may require further refinement or to identify problem areas. Those items identified in 8260-series orders as "requires approval by Flight Standards Service" (e.g., GP angle above 3.00 degrees, climb gradient in excess of 500 feet/NM, etc.) are not to be interpreted as a requirement for a waiver and do not require completion of a Form 8260-1, Flight Procedures Standards Waiver. Additionally, on request, AFS-400 may permit a deviation from a policy standard for situations where a waiver would not be practicable (e.g., an equivalent level of safety is not warranted) on a case-by-case basis and can be authorized through the Flight Standards approval process. Approval requests of these types must be made in plain text by memorandum and submitted to AFS-460 for approval. All documentation and supporting data must accompany the approval request so reviewing offices (i.e., Procedure Review Board) can conduct an evaluation without additional research. Submit appropriate 8260-series forms with each request to include charts depicting the procedure and all items that are the subject of the approval request. Instrument procedures must not be submitted for publication until waiver approval and/or approval request action has been completed.

2-12-2. Waiver Processing. Request waivers by completing the front of Form 8260-1. Enter only one waiver request on the waiver form. Detailed instructions for completing the form are contained in section 8-4. Figures 8-4-1 & 8-4-2 provide an easy reference for waiver form processing and routing requirements.

a. Submit a request for a waiver on a Form 8260-1. Each waiver request will be considered *only* when there is no other suitable way to resolve a procedural problem, or to provide a required service.

b. Complete documentation and supporting data must accompany the waiver request so reviewing offices can conduct an evaluation without additional research. Submit appropriate 8260-series forms with each request. Include charts depicting the procedure and/or obstacles that are the subject of the waiver.

c. When a procedure is amended, reprocessing of an existing waiver is not necessary unless the reason for the amendment directly affects the basis for the waiver.

d. When a waiver is proposed for obstacle penetration of ILS final or straight missed approach surfaces, request a Collision Risk Model (CRM) study through AFS-420. Refer to Order VN 8260.4, ILS Obstacle Risk Analysis. At the time of the request, provide all data required for conducting the study. AFS-420 then analyzes and interprets the result of the CRM and provides the results to AeroNav Products.

Note: The CRM does not assess Category E aircraft.

e. Forward the original Form 8260-1 and supporting data for approval to AFS-400 through AFS-460. For United States Army procedures, forward waiver requests for approval to the United States Army Aeronautical Services Agency (USAASA) or United States Army Aeronautical Services Detachment-Europe (USAASDE). Use the specially adapted automated version of the Form 8260-1 for United States Army waiver processing.

f. The Flight Procedure Implementation and Oversight Branch, AFS-460, processes all waiver requests and schedules a Procedure Review Board (PRB) to gain consensus on approval/disapproval. If waiver is approved, the results are forwarded to AFS-400 for endorsement. When necessary, Flight Standards will annotate the Form 8260-1 that approval is contingent upon a successful flight inspection report.

g. AeroNav Products is responsible for ensuring that an approved waiver of standards is on file for each instrument procedure requiring waiver action. AFS waiver approval must be obtained before submitting the procedure for publication.

2-12-3. Waivers for Special Instrument Approach Procedures. Except for proponent-developed procedures, when a waiver is approved for a special instrument approach procedure, Flight Standards must coordinate with the appropriate FSDO concerning any special conditions that may be imposed on the use of a special authorization. This action is necessary to establish required supervision to ensure user compliance with equivalent level of safety provisions. For example, special aircrew training may be required as an equivalent level of safety.

2-12-4. Safety Management System (SMS) Requirements.

a. The FAA's Safety Management System Policy must be followed, and Safety Risk Management (SRM) procedures in that policy must be followed to ensure that all SMS requirements are met. A SRM process ensures that:

(1) Safety-related changes are documented.

(2) Risk is assessed and analyzed.

(3) Unacceptable risk is mitigated.

(4) The effectiveness of the risk mitigation strategies is assessed.

b. All relevant factors are considered when conducting a safety risk assessment, including:

(1) Navigation capabilities and navigation performance.

(2) Suitable weather reporting facilities.

(3) Operator certification and training.

(4) Systems and/or subsystems intended function and flight or ground environment in which the system is to perform that function.

(5) Traffic density and distribution.

(6) Airspace complexity, route structure, and classification of the airspace.

(7) Airport layout, including runway configurations, runway lengths, and taxiways.

(8) Types of aircraft and their performance characteristics, including aircraft configurations.

(9) Human factors issues.

2-12-5. Periodic Review of Waivers. AeroNav Products must review approved waivers at the time of the periodic review (see paragraphs 2-8-1 & 2-8-2) to determine whether the waivers are still required. Cancel unnecessary waivers.

2-12-6. Cancellation of Waivers.

a. Cancellation of waivers must include a reason in the comments block. Such termination may be directed by AFS-400. AeroNav Products is responsible for planning ways to eliminate waivers through the modification, addition, or relocation of navigation facilities.

b. Distribution of a canceled waiver must be made to the same organizations that received the approved waiver [see paragraph 8-4-1].

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Chapter 3. En Route Procedures

Section 3-1. General

3-1-1. General.

a. The en route airspace structure of the National Airspace System (NAS) consists of three strata. The first, or lower, stratum consists of conventional navigation (Victor) and area navigation [RNAV] (Tango) Air Traffic Service (ATS) routes that extend from the floor of controlled airspace up to but not including 18000 feet mean sea level (MSL). The second stratum contains conventional navigation (Jet) and RNAV ("Q") ATS routes and extends from 18000 feet MSL up to and including flight level (FL) 450. The third stratum allows random operations above FL 450. Federal airways, jet routes, and RNAV routes are designated by rulemaking action under Title 14, Code of Federal Regulations, (14 CFR) Part 71.

b. The standards in Order 8260.3, Volume 1, chapter 17 are concerned with the first two strata and apply to the establishment of flight procedures for airway and off-airway routes in the lower stratum, and for designated and non-designated jet routes in the second stratum. The criteria establishes obstacle clearance limit standards applicable to the segments of each airway or route, and to the turning areas required to transition from one airway or route to another. Consideration is also given to communications requirements and to the use of radar to fill navigation "gaps." In areas outside the continental United States that do not have the airway structure divided as above, the criteria apply to the corresponding altitude levels in the development of en route procedures.

3-1-2. Publication.

a. En Route Minimum Altitudes. Minimum en route altitude (MEA), minimum reception altitude (MRA), maximum authorized altitude (MAA), minimum obstruction clearance altitude (MOCA), minimum crossing altitude (MCA), and changeover point (COP) are established by the Federal Aviation Administration for instrument flight along Federal airways in 14 CFR Part 95. They may be established for off-airway routes within the United States and its territories. The altitudes are established after it has been determined that the navigation aids to be used are adequate and so oriented on the airways or routes that signal coverage is acceptable, and that flight can be maintained within prescribed route widths.

b. Altitudes and changeover points are published regularly in the Federal Register as 14 CFR Part 95. The master lists of 14 CFR Part 95, COPs, direct routes, intersections, holding patterns, and off-airway routes (non-Part 95) are maintained by NFDC.

Section 3-2. Criteria Application and Development

3-2-1. Criteria Application. The criteria contained in Order 8260.3, Volume 1, chapter 17, have been developed primarily for application to the very high frequency (VHF) navigation system. When en route flight procedures using the low frequency (LF) or integrated (VHF-LF) navigation are required, standards have been included in the appropriate sections for application to the use of these systems during the remaining life of the LF system. However, since the navigation system is based upon the VORTAC, the use of LF navigation facilities will be considered a system deficiency and must be limited to those cases where no other course of action is possible and where a definite operational requirement can be justified.

3-2-2. Development of Criteria. To assist in understanding the criteria, the methods used in its development are being included. An en route segment involving flight between two points is a flight procedure. As such, it must be provided with characteristics that result in safety and practicality in all aspects. Safety and practicality in a flight procedure are dependent upon the pilot, the aircraft, and the navigation system being used. The operational characteristics of all three were evaluated collectively, and the results of the evaluation applied to the operating environment. In the development of en route criteria, the total problem was broken into two parts: first, the pilot/aircraft combination; and second, the navigation system. Data considered essential in these areas were assembled and combined to find a total system accuracy factor.

a. Pilot/Aircraft. Most of the work in this area was done in the Aeronautical Center flight simulator, but some tracking data were obtained from actual flight. Two types of information were required: pilot habits in tracking the specified course, bearing, and/or radial and the flight track resulting from turns at various speeds and altitudes under various wind conditions. The more critical turn tracks were lifted from simulator tracings and incorporated in the criteria for direct application through the use of turning area templates.

b. Navigation System. Quantitative values were developed to determine the probable aircraft displacement resulting from the combination of navigation facility radial alignment displacement, transmitter monitor tolerance, receiver accuracy, and finally, the previously determined pilot/aircraft tracking accuracy. These factors were processed using the Gaussian (normal) curve, and probability factors determined.

c. Probability. System accuracy resulting from these computations is at 95 percent probability, a system accuracy of plus-or-minus 4.5 degrees, and a 99 percent probability for a system accuracy of plus-or-minus 6.7 degrees (for VOR/VORTAC facility signals). The 4.5 degrees figure became the basis for primary area obstacle clearance criteria, airway and route widths, and the ATC separation procedures. The 6.7 degrees value provides secondary obstacle clearance area dimensions.

Section 3-3. Establishment of En Route Airspace

3-3-1. Relationship of COPs to Air-Space Dimensions. Application of these criteria considers the location of the COP for determining the dimensions of the required associated airspace. When it is anticipated that the COP will be established beyond 51 NM from the facility, the location of the COP should be determined by AeroNav Products during the development of airspace proposals within the Air Traffic Service Area. On new facilities, a reasonably accurate estimate of the COP should be obtained during the site survey. Other data, such as MEA, MOCA, MRA, etc., should also be obtained at this time. This information will assure the completion of necessary airspace planning in the Air Traffic Service Area, and will permit the description of all required airspace in the Notice of Proposed Rule Making (NPRM).

3-3-2. Relationship of MEAs to Controlled Airspace Floors.

a. Buffers. MEAs for routes wholly within controlled airspace will normally provide for a buffer above the floor of controlled airspace. This buffer will be at least 300 feet within Class E airspace containing terminal instrument procedure segments (feeder, initial, intermediate, final, missed approach) and 500 feet within the low altitude airway structure. However, exceptions may be made which provide only 300-foot buffer below these airways where the lesser buffer area will permit retaining a cardinal altitude or otherwise result in a definite operational advantage. Establish these buffers to the nearest 100-foot increments: e.g., 1049.99 feet becomes 1000 feet and 1050.00 feet becomes 1100 feet. Refer to Order JO 7400.2, Procedures for Handling Airspace Matters (latest edition).

b. Rounding. Where rounding off MEAs to the nearest 100 feet results in a vertical separation between the floor of controlled airspace and the MEA of not less than 451/251 feet, consider such separation as being in practical compliance with that of 500/300 feet specified in applicable criteria.

Note: The above rounding process is for airspace application only and must not create a situation where less than the required obstacle clearance is afforded.

Section 3-4. Substitute En Route Flight Procedures

3-4-1. General.

a. Air Route Traffic Control Centers (ARTCCs) are responsible for specifying essential substitute airway or route segments (sub-routes) and fixes for use during scheduled or unscheduled VOR/VORTAC shutdowns.

b. AeroNav Products, in coordination with ARTCCs, determines when the length of outages or other factors require publication of sub-routes.

c. Technical Operations, Flight Inspection Services Office (AJW-3) provides flight inspection services, obstacle clearance verification, certification, and final approval of substitute routes.

3-4-2. Format. ARTCCs can use a format similar to that shown in figure 3-4-4 in preparing substitute routes for scheduled or unscheduled facility shutdowns, and for submission of the sub-route to AeroNav Products for approval. Substitute routes must be described from navigational fix to navigational fix, to accurately define the route to be used. An MEA and an MAA must be provided for each route segment. Temporary reporting points should be substituted for the out-of-service facility and only those other reporting points that are designated as essential by the Air Traffic Organization. Normally, temporary reporting points over intersections will not be necessary where center radar coverage exists. An MRA must be established for each temporary reporting point. Where a substitute route cannot be developed for an existing route or reporting point, indicate none under the substitute column.

3-4-3. Facilities Used. Substitute routes should normally be based on VOR/VORTAC aids established and published for use in the altitude strata concerned. However, in the case of substitute routes in the upper airspace stratum, it may be necessary to establish routes by reference to VOR/VORTAC facilities utilized in the low altitude system. NDB facilities may only be utilized where VOR/VORTAC coverage is inadequate and ATC requirements necessitate use of such aids. Where operational necessity dictates, process an ESV request [see paragraph 2-4-2]. Temporary reporting points may be established in connection with the substitute routes and, where possible, a temporary reporting point will be established over the facility being shutdown.

3-4-4. Controlled Airspace. Substitute routes may be approved as long as the centerline of the route is contained within controlled airspace. Designation of additional controlled airspace to contain substitute routes need not be accomplished because of the temporary nature of the routes. Substitute routes for off-airway (non-14 CFR Part 95) routes need not be in controlled airspace [see figures 3-4-1 and 3-4-2].

3-4-5. Flight Inspection. Substitute routes are flight inspected in accordance with Order 8200.1. If substitute routes do not overlie existing routes, or are wider than existing routes [see figure 3-4-3], map studies are required to identify controlling obstacles. AeroNav Products must document controlling obstacles on FAA Form 8260-16, Transmittal of Airways/Route Data. Retain these forms locally for future review. Flight inspection verifies controlling obstacles.

3-4-6. Planning and Coordination. The Air Traffic Technical Operations Service Areas will provide the dates of proposed scheduled shutdowns to AeroNav Products, who must maintain a schedule of shutdowns and the estimated duration of the outages. AeroNav Products must act on this information as far in advance as possible to enable timely submission of the sub-routes to NFDC for publication. AeroNav Products should be prepared for the eventuality when publication of sub-routes is not related to scheduled outage.

Figure 3-4-1. FAR 14 CFR Part 95 Sub-Route

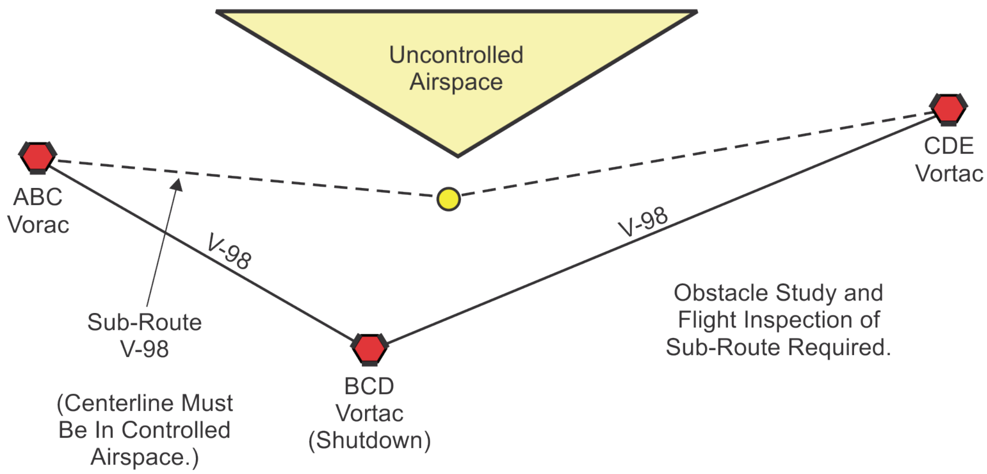


Figure 3-4-2. Non-14 CFR Part 95 Sub-Route

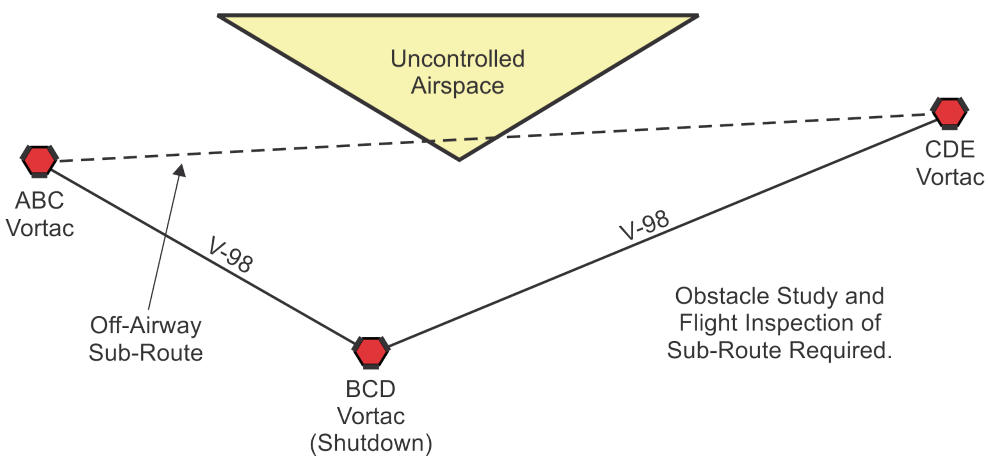
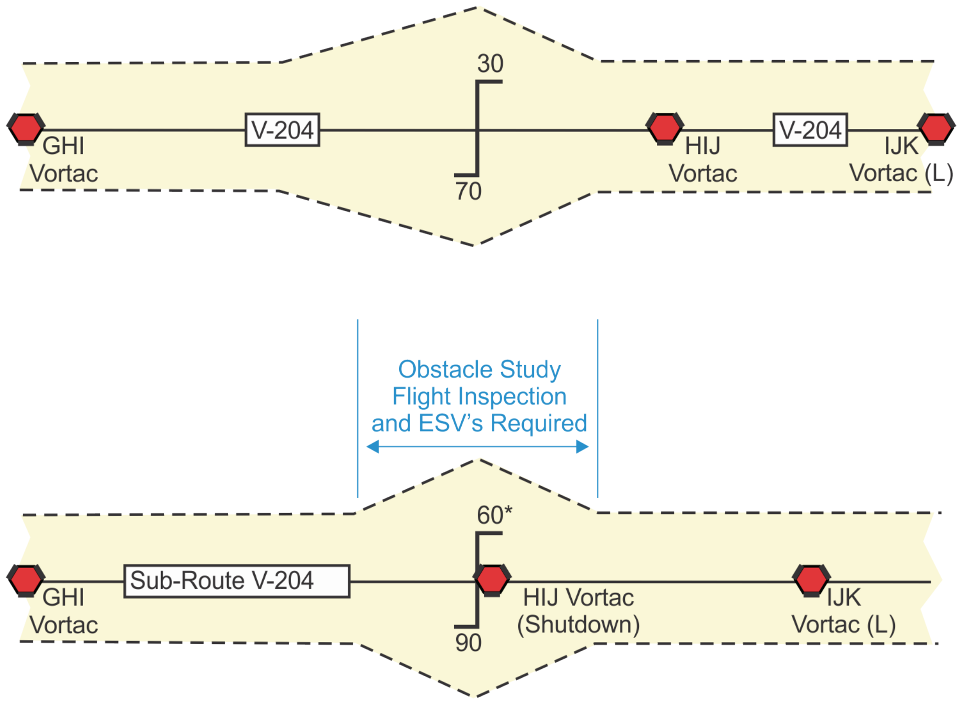


Figure 3-4-3. Sub-Route Wider than Existing Route



*COP's are normally established over the shutdown facility; however, they may be established at any point for operational reasons: terrain, facility restriction, MRA, airspace, etc., providing flight inspection requirements are met.

Figure 3-4-4. Substitute Route Structure

Snowflake, CO, VORTAC shutdown, scheduled or unscheduled. For substitute routes, MEAs, and Reporting Points, use the following:

LOW ALTITUDE

	Existing Airways	**Substitute Routes**	**MEA/MAA**
V220	SKI VORTAC to SNO VORTAC	SKI VORTAC to Temp SNO Int via SKI R-340	10000/17500
V220	SNO VORTAC to MTN VORTAC	Temp SNO Int to MTN VORTAC via MTN R-152	11000/17500
Direct	SNO VORTAC to ASPEN Int	None	
Off-Airway	SNO VORTAC to VAL VOR	Temp SNO Int to VAL VOR via SBT R-259 to SBT, SBT R-040 & VAL R-220	15000/37000

Existing Reporting Point	**Temporary Reporting Point**	**MRA**
SNO VORTAC	Temp SNO Int: SKI R-340/82 & SBT R-259/65	10000
RUTHY	SKI R-340/43	8500
SARDY	Temp SARDY Int: MTN R-152/60 & SBT R-270	11000
SILVR	None	

HIGH ALTITUDE

	Existing Routes	**Substitute Routes**	**MEA/MAA**
J233	BRR VORTAC to SNO VORTAC	BRR VORTAC to Temp SNO DME via BRR R-314	20000/45000
J233	SNO VORTAC to FUN VORTAC	Temp SNO DME to FUN VORTAC via FUN R-148	20000/45000

Existing Reporting Point	**Temporary Reporting Point**	**MRA**
SNO VORTAC	Temp SNO DME: BRR R-314/159 & FUN R-148/133	20000
HILAN	BRR R-314/82	18000

Approved: ____, Date ____________

(Name), Manager
AeroNav Products, AJW-32

3-4-7. Processing.

a. Lead Time. Process data concerning substitute routes sufficiently in advance of the effective date of the facility shutdown to assure publication when charting is required. To provide necessary lead time, the substitute routes must be forwarded to NFDC nine weeks prior to the chart's effective date. If the lead time cannot be provided, delay the shutdown or consider printing a special graphic NOTAM. Normally, shutdown of facilities scheduled for 28 days (half the life of the en route chart) or less will not be charted; however, traffic considerations at major terminals may make charting necessary for the short-term shutdowns.

b. Submissions.

(1) ARTCC submitted substitute routes [see figure 3-4-4] that require the signature of the AeroNav Products manager, or a delegated representative. This signature thereby indicates operational approval of these sub-routes for unscheduled use. This approval must be submitted directly to the ARTCC concerned [see paragraph 3-4-9b].

(2) When AeroNav Products determines that publication is required for a scheduled or extended unscheduled outage, AeroNav Products forwards the ARTCC submitted substitute routes to NFDC for publication [see paragraph 3-4-9a].

3-4-8. Periodic Review.

a. The ARTCC must review substitute en route flight procedures at least once every four years and any time that changes occur in the airway structure. The ARTCC must submit any required modifications to AeroNav Products for certification and approval.

b. AeroNav Products.

(1) Notify the responsible ARTCC and withdraw approval when:

(a) Frequency protection can no longer be provided to support the sub-route procedure.

(b) Flight inspection data is not available to support continued certification and approval of the sub-route procedure.

(2) Review existing and proposed sub-routes for required obstacle clearance at least once every 4 years.

(3) Notify the ARTCC of any amendments necessary.

3-4-9. Distribution.

a. For Publication. List the shutdown dates in the cover letter.

RFSD	1 copy
NFDC	2 copies
ARTCC	1 copy
AeroNav Products	Original

b. Non-Publication.

RFSD	1 copy
ARTCC	1 copy
AeroNav Products	Original

Section 3-5. Off-Airway Routes

3-5-1. Establishment. Establish off-airway routes in the same manner, and in accordance with the same criteria, as airways and jet routes. Off-airway routes predicated on public navigation facilities and wholly contained within controlled airspace will be published as direct 14 CFR Part 95 routes. Routes predicated on privately owned navigation facilities or not contained wholly within controlled airspace will be published as off-airway routes.

a. Process. Normally, a scheduled air carrier operator through its Principal Operations Inspector (POI) initiates requests for the establishment of off-airway routes. Upon receipt of a request for an off-airway route, AeroNav Products must coordinate with the Eastern, Central, or Western Service Areas. The applicable Air Traffic Service Area will process the route in accordance with Order JO 7400.2 to ascertain that there is no conflict in use of the airspace. Following Air Traffic coordination, AeroNav Products must evaluate the adequacy of off-airway routes. Consider the following:

(1) Type of aircraft and the navigation systems used.

(2) Proximity to military bases, training areas, and low-level military routes.

(3) Adequacy of communications along the route.

b. AeroNav Products Documentation. Document MEAs and related procedural data on Form 8260-16. Return a copy of the form to the FSDO indicating approval or disapproval of its request.

3-5-2. Listing. Pursuant to the responsibility of the Air Transportation Division (AFS-200) for surveillance of all authorized navigation facilities and routes, a requirement exists for maintaining a current listing of off-airway routes that have been assigned to air carriers by AFS operations personnel. These routes are documented in the NFDD that is published by NFDC when changes occur.

3-5-3. Off-Airway Data. AeroNav Products should establish arrangements for obtaining and maintaining complete off-airway route information. The following is suggested:

a. FSDOs provide AeroNav Products with copies of all changes or cancellations to IFR off-airway route authorizations.

b. AeroNav Products uses this information for development of flight inspection requirements and for maintaining current records.

3-5-4. Processing Data to NFDC. Use FAA Form 8260-16 to forward IFR off-airway data to NFDC. Do not designate off-airway non-Part 95 routes as special routes even though associated with special instrument approach procedures.

Section 3-6. New or Revised National Airspace System Routes

3-6-1. Definition - Route. For the purpose of this section, a route includes all charted en route depictions requiring 14 CFR Part 71 airspace actions and/or 14 CFR Part 95 procedural data application.

3-6-2. Coordination Procedures.

a. T**he applicable Air Traffic Service Area** provides AeroNav Products with the NPRM for new or revised routes. Revisions to currently published routes will be handled on an individual basis. When a currently published route will be revised by a final rule without an NPRM, the applicable Air Traffic Service Area will provide the details of the change to AeroNav Products to request flight inspection and to coordinate the planned effective date.

b. AeroNav Products Action. AeroNav Products requests flight inspection to furnish a copy of the NPRM and forwards preliminary evaluation results to the applicable Air Traffic Service Area. If the proposal is satisfactory, include changeover point information. If the route is not satisfactory, provide alternate recommendations.

3-6-3. Publication of Procedural Data.

a. AeroNav Products must forward final route data, with the NPRM docket number, to NFDC on Form 8260-16. This form must be submitted within the comment period specified in the NPRM. Conditions found during surveillance inspections of established routes, which would require a change to MEA, MOCA, MAA, or COP from the previously published data, must be brought to the attention of the procedures specialist for corrective action.

b. The ARTCC, in conjunction with the applicable Air Traffic Service Area, is responsible for developing airspace requirements for the routes published in 14 CFR Part 71; and AeroNav Products is responsible for developing the related procedural data published in 14 CFR Part 95.

Section 3-7. Minimum Vectoring Altitude (MVA) and Minimum IFR Altitude (MIA) Charts

3-7-1. Chart Preparation. MVA and MIA charts are developed by air traffic control facilities for areas where there are numerous minimum altitude requirements due to variable terrain features and/or manmade obstacles. The responsible ATC facility determines the area of consideration and chart design based on topography, obstruction data, and operational requirements in accordance with instructions contained in Orders JO 7210.3, Facility Operations and Administration; JO 7210.37, En Route Minimum IFR Altitude (MIA) Sector Charts; and 8260.3, Volume 1, chapter 10. AeroNav Products personnel may be requested to participate in original chart development at the option of the ATC facility.

3-7-2. Obstacle Clearance. Required obstacle clearance and associated additives and/or reduction are as specified in Order 8260.3, Volume 1, chapter 10.

3-7-3. Controlled Airspace. Controlled airspace (and associated buffers) and considerations required by Order 8260.3, Volume 1, chapter 10 are the responsibility of ATC facilities.

3-7-4. Chart Review and Approval.

a. Civil Vectoring Charts.

(1) ATC Action. The ATC facility forwards a memorandum through the Service Area Operational Support Group, Flight Procedures Team, stating that a MVA/MIA chart package derived from the Sector Design and Analysis Tool (SDAT) has been completed. This memo includes a statement that the MVAC was developed in SDAT, the SDAT project file name, and that it is available on the SDAT repository. One Form 7210-9, Minimum IFR Altitude/Minimum Vectoring Altitude Obstruction Documentation, Vectoring Altitude Obstruction Documentation (see Order JO 7210.3, chapter 3, section 9) with the Air Traffic Manager's (ATM) signature is to be attached. Additionally, the project file must have a scanned/digital copy of Form 7210-9 with the ATM's signature imported into the SDAT project file. The ATC facility updates, as required, and/or reviews the MVA/MIA chart to ensure accuracy, and jointly approves any amendment or review with AeroNav Products.

(2) AeroNav Products Action. Review MVA/ MIA chart submissions (including automated data submissions) to ensure that obstacle clearance and controlled airspace requirements are met. Coordinate any recommended adjustments in chart design, or necessary changes in MVAs/MIAs or controlling obstructions, with the originating ATC facility. Upon completion of a satisfactory review, approve the chart over the signature of the AeroNav Products manager, or his/her designated representative, on the Form 7210-9, and return it to the ATC facility. The returned copy must be the original signed copy or a digital copy of the original with required signatures to ensure quality representation of the form.

Note: It is not required to maintain/file a graphic depiction of the MVA/MIA chart when completed with SDAT and stored in the SDAT Repository.

b. Military MVA Charts. The FAA has no responsibility for the technical review of military MVA charts, with the exception of United States Army charts, which are reviewed in accordance with the NAT 127 Agreement and Order 8260.15. Honor other military requests on a time-available basis in accordance with guidelines contained in chapter 6.

3-7-5. Emergency Obstruction Video Map (EOVM).

a. Establishment. An EOVM is established by ATC at all terminal radar facilities that have radar coverage in designated mountainous areas, and is intended to facilitate advisory service to aircraft in an emergency situation wherein appropriate terrain/obstacle clearance minimum altitude cannot be maintained. Order JO 7210.3 specifies EOVM design, preparation, production, and verification requirements.

b. AeroNav Products Review. Limit review of EOVMs provided by the AT facilities to ensure the minimum design features are included. Verify contour elevations, mountain peaks, and other obstructions that are selected and depicted on a sectional chart. Ensure a 200-foot additive has been included in all terrain values to assure clearance over natural vegetation and AAOs.

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Chapter 4. Terminal Procedures

Section 4-1. General

4-1-1. General. The FAA has the responsibility to establish instrument procedures used for terminal operations at civil airports within the United States and its possessions. The FAA also provides or approves instrument procedures used by United States flag carriers at foreign airports.

4-1-2. Categories of Instrument Approach Procedures. Procedures published in the Federal Register under Title 14 of the Code of Federal Regulations (14 CFR) Part 97 are identified as "standard instrument approach procedures" (SIAPs). These procedures are available to all users. Instrument flight procedures authorized for use only by air carriers or some other segment of the aviation industry are not published in the Federal Register and are identified as "Special Procedures." Special Procedures may be developed for public and private use based on aircraft performance, aircraft equipment, or crew training, and may also require the use of landing aids, communications, or weather services not available for public use [see paragraph 8-8-3].

4-1-3. Airspace Requirements.

a. Public use procedures and Special procedures at Part 139 airports must be contained within controlled airspace to the maximum extent possible as specified in Order JO 7400.2, Procedures for Handling Airspace Matters.

b. Where an airport does not qualify for a Class B/C/D/E surface area, designate 700-foot Class E airspace. In the latter case, landing minimums may be established below the floor of controlled airspace (see Order JO 7400.2).

c. Designate 1200-foot Class E airspace as necessary to transition aircraft to/from the terminal or en route environment to the instrument flight procedure. This includes all arrival terminal routes and departure transitions (see Order JO 7400.2).

d. Requirements for minor adjustment to existing controlled (Class B/C/D/E) airspace, to fully encompass an instrument procedure, will not form the basis for withholding procedure publication provided no less than the basic required 700-foot/1200-foot Class E airspace is in place. An approach procedure may be published prior to obtaining the optimum configuration of controlled airspace when the following conditions exist [see Order 8260.26, Establishing and Scheduling Standard Instrument Procedure Effective Dates]:

(1) The centerline of all terminal routes is located within existing controlled airspace.

(2) The course reversal (procedure turn, hold-in-lieu of procedure turn, or teardrop) maneuvering area out to the appropriate distance specified in chapter 5 is contained within existing controlled airspace.

(3) The final approach fix is contained within existing controlled airspace.

e. Special procedures other than those noted in paragraph 4-1-3a, should, where possible, be contained within controlled airspace in accordance with Order JO 7400.2. Special procedures may be established and approved outside of controlled airspace where it is not possible to designate controlled airspace. In such cases, annotate the procedure: "Procedure not contained within controlled airspace," and advise the appropriate Flight Standards District Office (FSDO) that controlled airspace will not be provided. Do *not* use special procedures as a temporary measure pending designation of controlled airspace for public use procedures.

4-1-4. Contractual Use of Private Facilities. An air operator may arrange for the use of a privately owned navigational aid (NAVAID). Such an arrangement requires a contractual agreement between the sponsor and the user regarding facility use. Flight Standards Service (AFS) must coordinate all requests for contractual use of private navigation aids with the sponsor. Approval of the special instrument procedure for an operator is contingent upon the Regional Flight Standards Division (RFSD) receiving a copy of an acceptable contractual agreement. Refer to paragraph 7-7-1 for procedures for the first time approval of a non-Federal NAVAID.

4-1-5. TERPS Application. Develop all instrument approach procedures, except foreign procedures developed in accordance with Order 8260.31, Foreign Terminal Instrument Procedures, under the provisions of Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), associated 8260-series orders, and the guidelines in this document. The following special provisions and guidelines apply to selected paragraphs of Order 8260.3 criteria. The paragraph numbers refer to identically numbered paragraphs in Order 8260.3.

a. Volume 1, paragraph 122a, Airport. The runway lighting requirement does not apply to night instrument takeoff procedures.

b. Volume 1, paragraph 122c, Obstacle Marking and Lighting. Do *not* deny instrument approach procedures due to inability to mark and light or remove obstacles that violate 14 CFR Part 77 surfaces. Exception: See Order 8260.3, Volume 1, chapter 3, section 3. Objects that penetrate these surfaces are normally studied by AeroNav Products prior to construction or alteration. AeroNav Products' recommendations for marking, lighting, or removal are made at that time.

c. Volume 1, paragraph 151, Coordination Conflicts. AeroNav Products must make every effort to resolve coordination conflicts, and must thoroughly evaluate objections received as a result of coordination or by direct inquiry. This evaluation should determine the validity of the comments and the course of action to be taken:

(1) Acknowledge the comments and amend or withdraw the procedure; or

(2) Determine that the procedure is correct as submitted. All adverse comments received, through formal coordination, must be answered in writing. Conflicts, which cannot be resolved by AeroNav Products, must be forwarded to the Flight Procedure Implementation and Oversight Branch, AFS-460, with an information copy to the commenting agency.

d. Volume 1, paragraph 160, General.

(1) When developing procedures at a location that requires the use of the "Z" and "Y" naming convention, operational requirements may require a suffix grouping; e.g., "Z" suffix procedures are used for RNP AR procedures, "Y" suffix procedures contain localizer performance with vertical guidance (LPV), etc. ATC Facility personnel may determine if this is necessary for their operations and inform the procedure developer to group procedures accordingly.

(2) Military operators have stated a requirement for tactical air navigational aid (TACAN) instrument approach capability to a limited number of airports. These airports have a prescribed very high frequency omni-directional radio range (VOR) procedure, based on a VOR collocated with tactical area navigational (VORTAC) facility, where TACAN-equipped aircraft are expected to operate will be identified by the DoD. TACAN-equipped aircraft may execute VOR procedures at these locations when the procedure is identified as "VOR or TACAN." This informs both the pilot and the controller that an approach may be executed with aircraft equipped with only VOR or with only TACAN. Approval for the use of individual VOR procedures by TACAN-equipped aircraft is subject to review for compliance with Order 8260.3 and flight-check criteria. Take the following actions to implement this program:

(a) Designate VOR/distance measuring equipment (DME) procedures, predicated upon the use of VORTAC, as "VOR/DME or TACAN" provided flight inspection has determined that the TACAN and VOR components will support the procedure. These procedures require DME. Establish the missed approach clearance limit at a radial/DME fix in lieu of the VORTAC facility to accommodate aircraft equipped with only TACAN.

(b) Establish a VOR type procedure when a VOR procedure (no TACAN requirements) is required to accommodate non-DME-equipped aircraft, and is predicated upon a VORTAC facility. However, establish combination very high frequency (VHF)/DME fixes, where possible, for optional use by DME-equipped aircraft.

(c) Make provision for TACAN-only equipped aircraft to use VOR approach procedures when requested by the appropriate military authority and procedure design and facility performance will permit. Where approval can be authorized, rename VOR procedures based on VORTAC facilities in accordance with the following examples: "VOR or TACAN RWY 30, or VOR or TACAN-A." Before this identification is used, flight inspection must determine that the TACAN azimuth alignment is satisfactory. Review and modify the procedure as necessary to fully support its use by TACAN-equipped aircraft:

1. Establish the missed approach clearance limit at a combination VHF/DME fix for TACAN aircraft.

2. Add DME fix capability to VHF intersections where required for TACAN use.

3. Ensure that the procedure can be flown satisfactorily by reference to TACAN-only equipment.

4. Ensure that the procedure can be flown satisfactorily by reference to VOR-only equipment.

5. Ensure that holding is not authorized for TACAN-equipped aircraft at the VORTAC. This also applies to VOR/DME or TACAN procedures.

e. Volume 1, paragraph 161, Straight-in Approach Procedures. When approaches meet straight-in criteria for parallel/multiple runways, name the procedures accordingly.

Examples:

VOR RWY 14L/R
NDB RWY 26L/C
VOR RWY 5/7

f. Volume 1, paragraph 162, Circling Approach Procedures.

(1) Do not duplicate the alphabetical suffix for circling procedures at an individual airport to identify more than one circling procedure. If more than one circling procedure exists, and regardless of the final approach alignment or type of facility, use successive suffixes.

Example:

NDB-A, VOR-B, LDA-C

(2) The alphabetical suffix for circling procedures must not be duplicated at airports with identical city names within one state. Regardless of the airport name, successive suffixes must be used for all airports that serve the same city.

Examples:

State	City	Airport	Procedure
Georgia	Atlanta	Municipal	VOR-A
Georgia	Atlanta	DeKalb	NDB-B
Georgia	Atlanta	Fulton	VOR-C

g. Volume 1, paragraph 172, Effective Date. See Order 8260.26. FAA policy does not permit the issuance of complete civil instrument approach procedures by Notice to Airmen (NOTAM).

h. Volume 1, paragraph 220, Feeder Routes. Whenever a feeder route meets NoPT alignment and descent gradient limitations, all or part of the feeder must be constructed as an initial segment. An IAF must be established and the route annotated NoPT [see paragraph 8-2-5g(1)].

Note: The entire length of a feeder route should not be constructed as an initial approach segment in designated mountainous areas if the segment length will exceed 50 miles or if it will traverse mountainous terrain significantly higher than the airport.

i. Volume 1, paragraph 221b, Emergency Safe Altitudes. This paragraph does not apply to civil procedures.

j. Volume 1, paragraph 241, Altitude Selection. The final approach fix (FAF) altitude must not be less than the highest straight-in or circling minimum descent altitude (MDA), including adjustments.

k. Volume 1, paragraphs 275 and 277b, Turning Missed Approach/Turning Area. The missed approach segment must be constructed with consideration given to all categories of aircraft. Plotting only the highest or heaviest authorized aircraft category area will not assure proper area evaluation for lower categories. Construct turning areas for each aircraft category for turns at the missed approach point (MAP); or for turns at the end of the straight portion of the combination straight and turning missed approach.

l. Volume 1, paragraph 283, Fixes Formed by Radar. Coordinate with the appropriate air traffic facility before establishing a radar fix to assure the facility agrees to provide radar fix service when requested or required. When an air traffic facility advises that they can no longer provide radar fix service, revise procedures to remove the radar fix.

m. Volume 1, paragraph 287c, Final Approach Fix. If the buffer or 40:1 surface evaluation identifies an obstacle penetration, you may clear the problem by increasing the MDA by the amount of obstacle penetration. When applying the buffer to a straight missed approach segment with positive course guidance, the area between the MAP and the 40:1 rise-starting point is considered missed approach primary area. The 12:1 surface begins where the 40:1 rise starts.

n. Volume 1, paragraph 3.1.2, Runway Visual Range (RVR). RVR must be authorized in accordance with Order 6560.10, Runway Visual Range (RVR).

(1) The Service Area, OSG-FPT must determine, in conjunction with the Technical Operations Service the following:

(a) Planned RVR installations, proposed commissioning dates, and runways to be served.

(b) Runways that meet the requirements for authorizing RVR.

(c) RVR installations that are to be used to report RVR for adjacent runways and the effective date of the procedures.

(2) AeroNav Products must revise affected procedures by the normal abbreviated or full amendment process.

o. Volume 1, paragraph 3.1.2a(3), Runway Marking and Lighting. If runway markings are removed or obliterated subsequent to the commissioning of the RVR, the RVR minimums may require adjustment. However, before an adjustment is made to the minimums, AeroNav Products should advise the appropriate Service Area, OSG-FPT who will advise the airport sponsor of the proposed course of action. Where corrective action cannot be accomplished within a reasonable length of time, AeroNav Products must submit a revised procedure reflecting the adjustment to landing minimums.

p. Volume 1, paragraph 3.1.3a, Standard Lighting Systems. The runway alignment indicator light (RAIL) portion of a medium intensity approach lighting system with runway alignment indicator lights (MALSR) or short simplified approach lighting system with runway alignment indicator lights (SSALR) must be operating in order to apply approach light credit associated with a full approach light system (FALS) facility class. Unattended approach light systems that have a radio control device for a pilot to exercise control over the system, qualify for the same minimums as light systems that are controlled from a ground position.

q. Volume 1, paragraphs 413a(2), 513a(2)(b), 613a(2), and 713a(2)(b). Circling approach alignment criteria, using on-airport facilities, permits the use of all radials (360 degrees). It is not a requirement for the final approach course to pass through a portion of the landing surface.

r. Volume 1, paragraphs 613c, 613e, and 713c. These paragraphs allow military procedures to apply a reduced required obstacle clearance (ROC) on non-directional radio beacon (NDB) approach procedures. Military procedures, developed using this reduced ROC, are for military use only. Develop civil procedures at joint civilian/military airports utilizing civil TERPS criteria. Where the military requests development of instrument approach procedures, or military use of existing civil procedures utilizing reduced ROC at joint civilian/military airports, annotate these procedures "Not for Civil Use," and effect documentation under appropriate FAA/military directives for separate Department of Defense (DoD) publication.

s. Volume 1, paragraph 907, and Volume 3, paragraph 3.9, Missed Approach Segment. The missed approach area dimensions for the localizer differ from those of the full ILS, unless the MAPs are collocated. Evaluate both missed approach areas for obstacle clearance requirements. Provide a single missed approach procedure to serve both ILS and localizer approaches. A localizer type directional aid (LDA), localizer only, localizer back course, or simplified directional facility (SDF) missed approach point must be at least 3000 feet prior to the localizer facility. For precision approaches, or where a glide slope is used, the DA/MAP must be no closer to the localizer antenna than a point where the localizer is 400 feet wide. See Order 8200.1, paragraph 15.20f(3)(c).

t. Volume 4, paragraph 1.2, Departure Criteria Application.

(1) Apply diverse departure criteria to all runways at airports where public or special instrument flight procedures (IFPs) exist and the FAA is the approving authority. If restrictions are not imposed, expect aircraft departures in all directions from all runways.

(2) If restrictions (40:1 surface penetrations) are identified for a specific runway in the diverse review, apply guidance established in Order 8260.46, Departure Procedure Program.

u. Volume 1, paragraph 1501r. Interpolate tables 15-1 and 15-2 or use the next higher values.

v. Volume 1, paragraph 1502g. Establish only one stepdown fix in a long-range navigation (LORAN) SIAP final segment.

w. Volume 1, paragraph 1512a. The 120-degree turn limitation does *not* apply for a feeder-to-initial segment connection where the initial segment is a course reversal.

4-1-6. Sidestep Maneuvers. A sidestep maneuver is the visual alignment maneuver, required by a pilot executing an approach to one runway and cleared to land on a parallel runway. The following conditions must exist:

a. Runway centerlines are separated by 1200 feet or less.

b. Only one final approach course is published.

c. Course guidance is provided on the runway centerline or within three degrees of the runway centerline of the primary runway.

d. The procedure is identified in accordance with Order 8260.3, Volume 1, paragraph 161.

e. Establish a nonprecision final approach area (using the same navigational guidance as is used on the primary approach) to the sidestep runway extending from the runway threshold to a point abeam the beginning of the primary runway's nonprecision final approach area. The area is longitudinally centered on the sidestep runway's extended centerline.

(1) The width of the localizer or SDF final approach area is as specified in Order 8260.3, Volume 1, chapter 9 (chapter 14 for SDF).

(2) For all other conventional final approach areas; where the approach facility is on the airport, base the width of the sidestep final approach area as if the navigation facility were located on the sidestep threshold. Where the facility is off airport, assume the facility is located abeam the beginning of the primary runway's nonprecision final approach area.

(3) For RNAV final approach areas, the combined LNAV areas will define the MDA for the sidestep maneuver.

f. Utilize the same nonprecision obstacle clearance used for the primary runway to determine the published MDA for the sidestep maneuver. Include adjustments for RASS when determining the sidestep MDA; do not apply adjustments for precipitous terrain and excessive length of final. Publish a single MDA to the sidestep runway. The published MDA must not be less than the highest MDA and/or DA for the approach and must provide obstacle clearance throughout the entire sidestep final approach area(s). When a stepdown fix is incorporated into the procedure, the sidestep MDA must only provide obstruction clearance between the last stepdown fix and the sidestep threshold. All stepdown fixes must provide appropriate obstruction clearance within the sidestep final approach area.

g. Calculate the descent angle from the approach FAF directly to the sidestep runway's visual threshold crossing height (TCH). When a visual glideslope indicator (VGSI) is not installed on the sidestep runway, then use an appropriate TCH from Order 8260.3, Volume 3, table 2-3. Calculate descent angles from stepdown fixes as measured along the sidestep runway's extended centerline to the sidestep threshold. The sidestep procedure must not be authorized if any angle exceeds standards. Minimum angles do not apply to sidestep maneuvers.

h. Apply a standard visual area to the sidestep runway and assess the 20:1 surface. If penetrated, mark and light the obstacle or publish a note denying the sidestep maneuver at night unless the conditions of Order 8260.3, Volume 1, paragraph 3.3.2c are satisfied.

i. Establish published visibility in accordance with Order 8260.3, Volume 1, paragraph 3.3.3c, except;

(1) Minimum height above airport (HAA) values specified within table 3-9 does not apply. Substitute height above touchdown (HAT) for HAA within table 3-10. Apply table 3-10 only if the HAT falls within the range of the table. Sidestep procedure visibilities must not be less than one mile for CAT A-B and not less than 1½ for CAT C-E.

(2) One-half mile visibility reduction is authorized when a full approach light system (FALS) is installed to the sidestep runway. The minimum visibility after applying this reduction must not be less than one SM.

(3) When the sidestep runway threshold is offset more than 1000 feet closer to the FAF than the runway with course guidance, increase the published visibility by an additional ¼ SM or by the actual offset distance, whichever is greater.

(4) Publish visibility as an RVR when the provisions of Order 8260.3, Volume 1, paragraph 3.1.2 are met.

j. Sidestep minimums must be published in accordance with the examples below:

Minimums block:

S-ILS 27L	LPV DA
S-LOC 27L	LNAV/VNAV DA
SIDESTEP 27R	LNAV MDA
CIRCLING	SIDESTEP 27R
	CIRCLING

4-1-7. Temporary Displaced Threshold Procedures. Temporarily displacing or moving the threshold may have an adverse effect on instrument approach/departure procedures. If an instrument procedure to the affected runway is required during the time of threshold displacement, evaluate existing instrument procedures as follows:

a. Once the new threshold/departure end has been established, obstacles that lie within the displaced area (machinery, vehicles, etc.) must be evaluated to ensure the procedure continues to meet Order 8260.3 criteria. If used at night or in instrument flight rules (IFR) conditions, runway lighting must include threshold lighting for the displaced threshold.

b. For procedures authorized straight-in minima, re-compute visibility based on the revised "MAP-to-threshold" distance and the NALS facility class.

c. Suspend vertically guided approach operations by NOTAM. This includes area navigation (RNAV) procedures that contain localizer performance with vertical guidance (LPV) and/or lateral navigation/vertical navigation (LNAV/VNAV) minima. Technical Operations Service, AJW-0, is responsible for turning off the instrument landing system (ILS) glide slope until the normal runway configuration is restored.

(1) There may be situations where the threshold is displaced only a short distance without affecting vertically guided approach capability. To determine if such procedures can remain useable, the relocated threshold crossing height (TCH) must be computed and be in compliance with Order 8260.3, Volume 3, table 2-3. Consideration must also be given to what may be located in the closed portion of the runway and the TERPS obstacle identification surface (OIS) must be evaluated to ensure proper obstacle clearance.

(2) Special instrument procedures must also be afforded the same assessment as standard instrument procedures. The results must be provided to the Regional NextGen Branch (RNGB) so that the change information is provided to all the recipients of the Special procedure affected.

d. Visual glide slope indicator systems (VASI/PAPI/PLASI) may be unavailable for the same reason as the vertically guided approach.

e. The elevation of the new threshold and airport will more than likely change. In this case, evaluate the revised HAT/HAA for visibility impact and NOTAM changes accordingly.

f. Evaluate departure procedures for use during threshold displacement from the new departure end of runway (DER) to ensure compliance with Order 8260.3.

Section 4-2. Standard Instrument Approach Procedures (SIAP)

4-2-1. General. SIAPs must be established in accordance with Order 8260.3, other specific 8260-series orders, and the policies set forth in this order. FAA policy and instructions for completing FAA 8260-series forms are contained in this order.

4-2-2. Coordination of Terminal Instrument Procedures. Coordination requirements for terminal instrument procedures are set forth in Order 8260.3, Volume 1, chapter 1, section 5 [also see paragraph 8-3-2d].

4-2-3. Radar Instrument Approach Procedures. Air Traffic Control (ATC) personnel determine which runways require radar instrument approach procedures and coordinate these requirements through AeroNav Products.

Section 4-3. Direction Finder (DF) Procedures

4-3-1. General. DF facilities have been established at air traffic facilities. Many of these have the capability to provide emergency approach procedure support where the DF antenna is suitably located with respect to an airport. This section describes a modified procedure to provide maximum stability in the approach by using small degrees of turns and descents.

4-3-2. Format. The DF approach procedure must be documented and approved on Form 8260-10, Standard Instrument Approach Procedure, and restrictively identified for emergency use only. Include a diagram showing the planview of the procedure, including magnetic courses and minimum flight altitudes. Provide minimum safe altitudes to 100 miles from the DF antenna. Name the appropriate ATC facility on Form 8260-10 to identify the source of DF control.

4-3-3. Application of Criteria. Formulate the basic DF approach procedure in accordance with Order 8260.3, Volume 1, chapter 8. Modify the approach pattern in accordance with the following guidelines:

a. Initial Approach Segment. The initial approach for on-airport facilities includes all portions of the approach between the station passage and the final approach course. Approach procedures for DF facilities located off the airport must have an intermediate segment, in accordance with Order 8260.3, Volume 1, paragraph 812. The following is a description of the modified low altitude triangular pattern:

(1) A 30-degree angle of divergence exists between the outbound course and the reciprocal of the inbound course.

(2) The outbound leg is established as a three-minute leg.

(3) The base leg is formed by a 120-degree turn to position the aircraft 90 degrees to the final approach course.

(4) Two 45-degree turns are provided to place the aircraft on final approach. These turns are depicted on the diagram and executed at the discretion of the DF operator.

b. Minimum Altitudes. Show minimum altitudes for each approach segment except for the portion between the 45-degree turns. Establish the minimum altitude for the final approach segment in accordance with Order 8260.3, Volume 1, paragraph 3.2.1d. Since these are emergency procedures, do *not* establish ceiling and visibility minimums.

c. Identification of Procedures. Normally, develop only one approach procedure for each DF location. More than one procedure may be developed when procedures for low and high performance aircraft are not compatible. Identify procedures in accordance with Order 8260.3, Volume 1, paragraph 161.

4-3-4. DF Vectoring Altitudes. Where a DF approach procedure is not authorized, DF vectoring altitudes may be developed for use by the controlling facility. Altitudes must be entered on Form 8260-10 and must be identified as DF vectoring altitudes. Required obstacle clearance is 1000 feet. Round altitudes to the next higher 100-foot increment. Minimum accuracy standards for controlling obstacles are stated in paragraph 2-11-3b.

4-3-5. DF Vector Area.

a. Criteria. Construct the DF Vector area in accordance with paragraph 4-3-2, and Order 8260.3, Volume 1, chapter 8.

b. Sector Radii.

(1) Outer sector radius is 100 NM.

(2) Middle sector radius is 40 NM (Doppler) or 30 NM (VHF/DF).

(3) Other distances may be used to sectorize around obstructions and otherwise, if operationally justified.

(4) Use a 20 NM sector radius for a low altitude SIAP, and the 30/40 NM radius for high altitude penetrations.

(5) Radii less than 10 NM should be used with caution due to the requirement for adjacent sector obstacle coverage stated in Order 8260.3, Volume 1, paragraph 810.

c. Sector Reduction. Use a minimum number of sectors by combining sectors where possible.

Note: Remember that DF is for emergency use; and ATC is attempting to get the aircraft into radar coverage or a clear area where the aircraft can let down VFR.

d. Minimum safe or sector altitudes may be increased and combined with adjacent higher sectors when a height difference does not exceed 500 feet - *unless* an operational requirement exists for lower altitudes (e.g., initial approach altitude for DF SIAP).

4-3-6. Distribution. AeroNav Products must prepare and approve Form 8260-10, assign the effective date, and distribute as described in table 8-3-1.

4-3-7. Cancellation of DF Procedures. When the DF procedure or DF vectoring area is no longer required, AeroNav Products must take action to cancel the procedure. Continued need must be determined during the biennial review.

Section 4-4. Category II and III ILS

4-4-1. General.

a. Guidance. The following directives (latest editions) contain criteria/guidance to be used to determine whether an airport/runway is suitable to support ILS CAT II and III procedures:

(1) AC 120-28, Criteria for Approval of CAT III Landing Weather Minima for Takeoff, Landing, and Rollout.

(2) AC 120-29, Criteria for Approval of CAT I and II Weather Minima for Approach.

(3) AC 120-57, Surface Movement Guidance and Control System (SMGCS)

(4) AC 150/5300-13, Airport Design

(5) Order 6750.24, Instrument Landing System and Ancillary Electronic Component Configuration and Performance Requirements.

(6) Order 8200.1, United States Standard Flight Inspection Manual.

(7) Order 8400.8, Procedures for Approval of Facilities for Part 121 and Part 135 CAT III Operations.

(8) Order 8400.13, Procedures for the Evaluation and Approval of Facilities for Special authorization Category I Operations and All Category II and III Operations.

Note: There are other orders and Advisory Circulars that apply to specific runway equipment, placement of hold signs/lines, etc. as well as navigational aid installation requirements. The above list would, in most cases, lead the reader to the other references. A full list of reference documents for all aspects of the procedures function is contained in appendix B of this order.

b. Advise the general public of airports authorized CAT I, II, and III minimums by publishing the appropriate 14 CFR Part 97 SIAP.

c. A detailed explanation of the characters used to identify a facility's class of performance is contained in Order 6750.24, appendix 2. The first character (I, II, or III), ILS International Civil Aviation Organization (ICAO) standards, is determined jointly by flight inspection and engineering personnel. The second character (A, B, T, D, or E), localizer course structure, is determined solely by flight inspection personnel. The third character (1, 2, 3, or 4), ILS integrity and continuity, is determined solely by engineering personnel.

d. Irregularities on pre-threshold terrain or HUD/autoland system/radio altimeter characteristics might adversely affect radio altimeter indications and thus affect autoland performance of some aircraft. Until or unless these aircraft demonstrate normal radio altimeter readings and acceptable HUD/autoland operations on that runway and this fact is listed in their operations specifications, they cannot conduct CAT III HUD/autoland operations. AFS-410/470 acts as the clearing house for listing which combinations of HUD/autoland systems/runways are or can be approved, and is positioned for receipt of information from Flight Inspection, AJW-0, ATC, Airports, and airport authorities regarding irregular underlying terrain situations at new runways or runways at which future CAT III procedures are proposed.

4-4-2. Action.

a. Regions.

(1) Applicable Technical Operations Service Areas and AeroNav Products coordination is essential. AeroNav Products, having been informed of the need for (and suitability of a runway to support) CAT II and III must assure obstacle clearance requirements.

(2) RNGB coordinates the procedure request with the RAPT. The RNGB is also responsible for coordinating the CAT II/III checklists and will notify AFS-410/470 when CAT II or III checklists are complete. Notification must contain the information obtained from AeroNav Products [see paragraph 4-4-2b(1)].

b. AeroNav Products.

(1) AeroNav Products must advise the regional FSD when a CAT II or III system has passed flight inspection. Notification must contain the following information:

(a) Airport.

(b) Runway.

(c) Flight inspection completion date.

(d) Facility classification.

(e) Minimums:

CAT II DA and RA.
CAT III RVR
(as appropriate).

(f) Date approach procedure will be available.

(2) Amend ILS SIAPs when CAT II and III minimums are authorized [see paragraph 8-6-5k].

c. Flight Inspection Services is responsible to take action when performance class data in AIRNAV needs to be corrected or updated. Flight Inspection Services will take immediate NOTAM action if needed and submit a data change request (Form 8240-20) to update the AIRNAV Database. The applicable Technical Operations Service Area must notify the Flight Standards Division and Flight Inspection Technical Operations Group of individual ILS facility performance classification determinations, and any change in the performance class of a facility, so that changes in CAT III authorizations can be made.

d. AFS-410/470 CAT II/III Status List Web Site. This notification will provide operators with the planned availability of the new minimums for preparation of operations specifications prior to publication of the SIAP.

4-4-3. NOTAM Requirements. When any component of the ILS system fails to meet the appropriate performance tolerances, the Air Traffic Vice President of Technical Operations issues a NOTAM (D) for suspension of CAT II/III minimums. If the suspension will exist longer than 224 days or will be permanent, AeroNav Products must submit an abbreviated or full amendment [see also paragraph 2-6-7h].

Section 4-5. Departure Procedures (DP)

4-5-1. General. Use Order 8260.46 for guidance and standardization for initiating, developing, documenting, processing, and managing the DP program.

4-5-2. Diverse Vector Area (DVA). A DVA must be reviewed by AeroNav Products (AJV-3) for accuracy and currency whenever the Obstacle Departure Procedure (ODP) for the same runway is reevaluated due to a change of the airport or runway data. A DVA based on a climb to an initial MVA/MIA must also be reviewed when the associated Form 7210-9 (or military equivalent) is revised. See paragraph 2-8-2a for Periodic Review requirements. See Order 8260.46 for DVA documentation requirements.

Section 4-6. Standard Terminal Arrival (STAR)

4-6-1. Introduction. STARs are developed and managed under the guidance provided in Order JO 7100.9, Standard Terminal Arrival Program and Procedures. The following guidance is provided in addition to what is contained in that order.

a. Air Route Traffic Control Centers (ARTCC) submit STARs to AeroNav Products through the applicable Air Traffic Service Area for review. ARTCCs are responsible for issuance of NOTAMs for STARs.

b. AeroNav Products' review must ensure obstacle clearance requirements; accuracy of courses, distances, and coordinates; clarity and practicality of the procedures; and assurance of navigational guidance adequacy. AeroNav Products must coordinate any discrepancies, required adjustments, or improvements noted during the review process and/or flight inspection with the sponsoring air traffic facility.

4-6-2. AeroNav Products Action.

a. STARs.

(1) Ensure that the STAR commences at a charted high or low altitude en route fix.

(2) Ensure, in conjunction with flight inspection, that minimum en route altitudes provide required minimum obstruction clearance altitudes (MOCA) and meet minimum reception altitudes (MRA), communication, and airspace requirements. Notify the appropriate ARTCC if NOTAM action is required.

(3) Ensure obstacle clearance requirements are met for lost communications instructions provided by the ARTCC. If the ARTCC did not provide lost communications instructions, and it is determined that obstacles/terrain presents a potential problem, coordinate with the ARTCC for resolution of the matter.

(4) Incorporate, where possible, the STAR termination fix into the SIAP as a feeder/initial approach fix.

(5) Ensure entry in maximum authorized altitude (MAA) from available documentation; e.g., flight inspection reports, expanded service volume (ESV) reports, etc.

b. General.

(1) Review from the Pilot's Standpoint. The procedure must be flyable and should be as simple as possible. Use clear, concise, and standard phraseology. Request flight inspection assistance.

(2) Ensure, in conjunction with flight inspection, that facility performance will support the procedure. This may require preparation of materials such as maps and ESVs to support facility flight inspection.

(3) Ensure the accuracy of courses, distances, and coordinates.

(4) Following Flight Inspection, return the signed form to the applicable Air Traffic Service Area for further processing.

(5) Retain a copy of each approved form with charts, computations, and supporting data to facilitate future reviews.

(6) Include normal distribution copies of Form 8260-2 for Mission Support Services, Aeronautical Information Management, AJV-2, and ARTCC in the package forwarded to the applicable Air Traffic Service Area.

Section 4-7. RNAV Procedure Development

4-7-1. General. This section contains supplementary guidance for the development of RNAV instrument procedures. RTCA DO-201A, Standards for Aeronautical Information, has established operational requirements and standards that aviation authorities, procedure designers, and airspace planners must consider when developing en route, arrival, approach, departure, and aerodrome environments. This guidance provides a standardized method of processing RNAV instrument procedures using information from this RTCA document.

4-7-2. RNAV Approach Procedure Design. Criteria for the development of RNAV instrument procedures can be found in Order 8260.58 and other related 8260-series orders.

a. All RNAV instrument approach procedures should be connected to the en route airway system in order to provide a seamless transition into the Terminal Area. Accomplish this by one of the following methods:

Note: This policy is recommended but not required and may not be practicable for helicopter procedures.

(1) Establish a feeder route from the en route airway to all initial approach fixes (IAFs) not on an airway.

(2) Extend the "T" leg initial segment to place the IAF on an en route airway. Do not extend the "T" leg more than 10 miles from the intermediate fix.

(3) Use a modified form of the basic "T" (L or I) or a route type approach.

(4) Establish a Terminal Arrival Area (TAA) as prescribed in Volume 4 of Order 8260.58.

(5) In lieu of the above, use a STAR that terminates at an IAF or IAF/IF or any point prior to the PFAF.

b. The RNAV procedure should, whenever and wherever possible, match the ILS at the same runway in the following respects: final and intermediate segment procedure ground track, missed approach, altitudes, fix locations/names, glidepath angles (GPAs), and threshold crossing heights (TCHs). Nothing in this policy requires an RNAV procedure to emulate a procedure turn used on an underlying ILS procedure. Due to the many variables involved in procedure design, especially relating to the very different aspects of ILS and RNAV design, it is impractical to set standards for all possible ILS/RNAV designs; therefore, in lieu of hard and fast design standards, use the following design guidelines:

(1) When designing an RNAV procedure at an ILS equipped runway, the RNAV procedure should emulate the ILS procedure to the maximum extent possible. In other words, if the ILS needs updating (i.e., PFAF placement to meet new/current standards), publish updated ILS and RNAV procedures concurrently. In emulating an ILS, do not include either a basic "T" or TAA in the RNAV IAP unless specifically requested by Air Traffic.

(2) If the ILS PFAF occurs at the LOC FAF, emulation of the ILS by the RNAV procedure may be a simple matter. In this case, the RNAV PFAF can be placed at the LOC FAF location and thus coincidence will have been achieved for the ILS PFAF, LOC FAF, and RNAV PFAF. Use the LOC FAF name for the RNAV PFAF name. Revising the ILS procedure will, in all likelihood, not be necessary.

(3) For a variety of reasons, the situation described in paragraph 4-7-2b(2) is seldom found in practice. Where the ILS PFAF is not collocated with the existing LOC FAF, the associated LOC portion of the ILS procedure may have to be revised at the same time the new RNAV IAP is developed.

(a) If the present LOC FAF is defined by DME, intersection or radar, revise the ILS procedure by relocating the LOC FAF to coincide with the RNAV PFAF which can be placed at the vertical descent angle interception point for the given ILS glide slope angle/TCH and LOC FAF altitude. Use the LOC FAF name for the RNAV PFAF name.

(b) If the present LOC FAF is defined by a facility such as an outer marker (OM) or locator outer marker (LOM) and localizer DME is available, define the LOC FAF using DME and collocate the LOC FAF and RNAV PFAF as in the option of paragraph 4-7-2b(3)(a). If possible, retain the present facility name for use at the LOC/RNAV FAF.

c. Establish an LNAV FAF for all new RNAV procedures at a location that will support a collocated PFAF for future RNP, LNAV/VNAV, and/or WAAS/GBAS procedures.

d. RNAV RNP procedures may be designed to support minimums with different RNP values in the final approach segment. The largest RNP value is the one that will be coded into the avionics database (pilots will have the ability to enter the lower values if their equipment permits).

e. ILS and/or LOC procedures may be combined with RNAV (GPS) procedures provided the additional requirements established in paragraph 8-2-2c are met. This will permit use of an ILS/LOC with the same ground track as the RNAV (GPS) procedure. When combining procedures, consideration must be given to the number of lines of minima that are possible and the potential human factors implications.

Note: There is also the option to publish a separate ILS/LOC approach using strictly conventional criteria or using a combination of both conventional and RNAV "Initial segment" criteria. See paragraph 8-6-6h for chart annotations required when adding an RNAV "Initial segment" to a conventional ILS/LOC procedure.

(1) Procedure naming will be in accordance with Order 8260.3, Volume 1, paragraph 161 and Order 8260.58, Volume 6, chapter 1.

(2) No more than five lines of minima can be published. For example, the following are several of possible options:

S-ILS 36	S-ILS 36	S-ILS 36
LPV DA	LNAV/VNAV DA	LNAV MDA
LNAV/VNAV DA	LNAV MDA	CIRCLING
LNAV MDA	CIRCLING	
CIRCLING		

4-7-3. Developing RNAV Waypoint.

a. In establishing the position of a waypoint fix, determine which category of fix will best meet the airspace, route of flight, obstacle clearance, and operational requirements. Fly-by and Fly-over fixes are the two basic types of waypoint fixes that are used in transitioning from one route segment to another when conducting instrument approach, en route arrival, or departure procedures.

(1) Fly-by (FB) waypoint fixes identify a position where a change in course occurs from one specified route segment to another. Turn anticipation is required and expected as the aircraft executes the turn maneuver. The FB waypoint fix is the most desired and useful type for use in RNAV procedure design due to the conservation of airspace. Unless otherwise required by the procedure design, all waypoint fixes defining a course change must be coded in the navigation database as FB.

(2) Fly-over (FO) waypoint fixes may or may not identify a change in course from one specified route segment to another. Turn anticipation is not permitted. FO fixes require substantially more airspace to protect for the turn than FB fixes, and should be used only where special design problems necessitate.

b. 8260-series forms must document waypoint type and waypoint description codes for all waypoint fixes used in RNAV procedure design. Because of the different obstacle assessments conducted, FO and FB information is critical to flight crews and should be consistently displayed on aeronautical charts and in navigational databases. The waypoint type (FO/FB) is documented on Forms 8260-3/5/7A as applicable [see paragraph 8-6-2a(6)]. For agencies providing a complete ARINC record printout of a procedure on Form 8260-10, waypoint description code entries are not required.

c. En Route. Do *not* establish RNAV WPs at National Airspace System (NAS) en route facilities. Do *not* establish RNAV WPs at en route fixes when used as feeder fixes for RNAV procedures.

d. Terminal. Develop terminal use RNAV WPs based on usage as follows:

(1) <u>Missed Approach Point (MAP)</u>. Normally the MAP is at the threshold but may be located prior to the threshold, on or off runway centerline.

(a) MAP Located at Threshold. The landing threshold is contained in the runway file in the RNAV database, and identified by ARINC code for the threshold. Do *not* document a MAP located at the landing threshold on a Form 8260-2.

(b) MAP not located at Threshold. The landing threshold will be the reference point. True bearing is from reference point to MAP. If the MAP is on runway centerline extended, use the reciprocal of the landing runway true bearing. Distance is from reference point to MAP.

(2) Final Approach Fix (FAF). Establish the location of the FAF as a true bearing and distance as follows:

(a) Final approach course aligned through threshold. Use landing threshold as reference point.

(b) Final approach course not aligned through threshold. Use MAP as reference point.

(3) Intermediate Fix (IF). Establish the location of the IF as a true bearing and distance as follows:

(a) No Course Change at FAF. Utilize the same reference point used to establish the FAF.

(b) Course Change at the FAF. Use the FAF as the reference point.

(4) Initial Approach Fix (IAF). Establish the location of the IAF as a true bearing and distance as follows:

(a) No Course Change at the IF or FAF: Utilize the same reference point used to establish the FAF.

(b) No Course Change at the IF, with a course change at the FAF. Use the FAF as the reference point.

(c) Course Change at the IF. Use the IF as the reference point.

(5) Feeder Fix. If a WP is required for use as a feeder fix, and will *not* be an en route fix, establish the location of the feeder fix as a true bearing and distance as follows:

(a) No Course Change at the IAF. Utilize the same reference point used to establish the IAF.

(b) Course Change at the IAF. Use the IAF as the reference point.

(6) Missed Approach. For all WPs in the missed approach, after the MAP, use the preceding WP as the reference point.

(7) Stepdown Fixes within Segments. Establish the location of waypoints used as stepdown fix(es) within a segment as a bearing and distance *from* the waypoint/fix that marks the beginning of the next segment in the procedure sequence (e.g., IAF, IF, FAF, etc.). For example, the forward true bearing from IF to IAF is 290.34 degrees. Establish the coordinates for

stepdown fix waypoints on bearing 290.34 degrees from the IF at the desired distance(s) between the IF and IAF.

Note: Use this method to determine stepdown fixes in ALL segments.

4-7-4. RNAV Leg Types.

a. Different types of arrival, approach, departure, and en route segments are required for RNAV. Consideration of these requirements during procedure design will result in a more efficiently designed flight path for all operators using airspace; particularly those equipped with computer-based navigation systems. These systems require encoding RNAV route segment flight paths into a format usable in navigation databases.

b. The aviation industry has adopted a route segment definition called "path and terminator." This concept is used for transforming arrival, approach, and departure procedures into coded flight paths that can be interpreted and used by a computer-based navigation system. A path terminator instructs the aircraft to navigate from a starting point along a defined path to a specified point or terminating condition. The path terminators are identified by a set of two alpha-characters, each of which has a meaning when describing a flight maneuver to a navigation computer. The first character indicates the types of flight path to be flown, and the second indicates where the route segment terminates. For example, a designated route from a NAVAID to a fix would be coded as "TF." The "T" indicates that a track is to be flown, and the "F" indicates that the segment terminates at a fix. There are over twenty different path and terminator sets ("leg types") used by the aviation industry to accommodate the coding of procedure route segments. However, only a limited few are suitable for use in RNAV procedure design.

c. Document leg type codes on FAA 8260-series forms in accordance with applicable instructions in chapter 8 and Order 8260.46. For agencies providing a complete ARINC record printout of a procedure on Form 8260-10, these entries are not required.

4-7-5. RNAV Leg Type Descriptions.

a. Initial Fix (IF). This is the point or fix where a flight segment begins. An IF is not a route segment and does not define a desired track in and of itself. It is used in conjunction with other leg types such as a TF leg in order to define the desired segment.

Note: "IF" in this context is not to be confused with initial approach fix (IAF) or intermediate fix (IF); however, it may be located at one of these locations for coding purposes.

b. Track-to-Fix (TF) Leg. This designates a track or geodesic path between two fixes. If the TF leg is the first route segment of a flight path, the TF leg begins at an IF; otherwise, the first fix of the TF leg is the termination fix of the previous route segment. The TF leg is the primary straight route segment for RNAV.

c. Constant Radius to a Fix (RF) Leg. An RF leg defines a curved path route segment about a defined turn center that terminates at a fix. The RF leg begins at the termination fix of the previous route segment. The previous segment is tangent to the arc of the RF leg at that fix. Waypoints defining the beginning *and* end point of the RF turn must be designated as "Fly-by."

d. Course-to-Altitude (CA) Leg. A CA leg is used as the first leg of an RNAV (GPS) [and RNAV (RNP) where applicable] missed approach procedure and must be followed by a DF leg. The CA leg must specify a course and altitude. The specified CA course must be the same as the final approach course. The specified CA altitude is determined using ONE of these methods:

(1) When the first fix encountered after the coded MAP is located on the final approach course extended, the specified CA altitude is the DA, MDA, or 400 feet above airport elevation, whichever is the *lowest*. For helicopter PinS procedures the specified CA altitude is the DA or MDA, whichever is *lower*, OR

(2) When a turning missed approach procedure is based on a "climb-to" altitude before turning, the specified CA altitude is the charted "climb-to" altitude.

e. Direct-to-Fix (DF) Leg. A DF leg is used to define a route segment (geodesic path) that begins at an aircraft present position, or unspecified position, and extends to a specified fix.

f. Heading-to-an-Altitude (VA) Leg. The VA leg is used in a departure route segment where a heading rather than a track has been specified for climb. The VA segment terminates at a specified altitude without a terminating position defined.

g. Course-to-Fix (CF) Leg. The CF leg is defined as a magnetic course that terminates at a fix.

h. Heading to a Manual Termination (VM) Leg. A VM leg is a manual termination leg used for whenever a departure or arrival route description specifies a course or heading to fly in expectation of a radar vector.

i. Heading to an Intercept (VI) Leg. A VI leg defines a specified heading to intercept the subsequent leg at an unspecified position.

4-7-6. Final Approach Segment (FAS) Data.

a. FAS data is described and attained using established TERPS criteria in Order 8260.3, Volume 3. This data is compiled and formed into what is called the FAS Data Block. The method of protection required for this flight data is known as the Cyclic Redundancy Check (CRC).

b. Document FAS Data Block information on Form 8260-10. Guidance on producing data that are placed on this form is located in appendix L. For agencies providing a complete ARINC packet record on Form 8260-10, the FAS Data Block information is not required on a separate Form 8260-10.

c. FAS Data Block coordinates must be in same coordinate system as the ground survey data (WGS-84 preferred).

4-7-7. Remote Altimeter Setting for Baro-VNAV. Baro-VNAV systems cannot fly to approach minimums based on a remote altimeter setting. Therefore, when the *primary* altimeter source is from a remote location, LNAV/VNAV is not authorized to be flown using Baro-

VNAV. When the primary altimeter source is local and a *secondary* altimeter source is remote, LNAV/VNAV minimums must be noted as not authorized (NA) to be flown with Baro-VNAV when the secondary altimeter is in use. See paragraph 8-6-6e(8) for applicable chart note to use.

4-7-8. Critical Temperature. Temperature limits above and below which Baro-VNAV operations are not authorized are published on RNAV instrument approach procedures. Current RNAV criteria standards provides the formulas to compute the critical temperatures for the airport of intended landing based on a given deviation from International Standard Atmosphere (ISA) for the airport elevation. For RNAV GPS procedures, use “Chart note: For uncompensated Baro-VNAV systems, LNAV/VNAV NA below ____°C (____°F) or above____°C (____°F).” For RNAV RNP procedures, use “Chart note: For uncompensated Baro-VNAV systems, Procedure NA below ____°C (____°F) or above____°C (____°F).” Maximum temperature published must not exceed 54°C (130°F). Document actual low/high temperature in the Supplemental Data section of Form 8260-9. Document the ISA deviation value used in the Supplemental Data section of the Form 8260-9. Enter descent rate for standard and high temperature in the Critical Temperatures Remarks section of the Form 8260-9.

4-7-9. DME/DME Screening Model. Apply the RNAV-Pro DME screening model to ensure satisfactory availability and geometry of DME navigation signals for RNAV arrivals, instrument approach (when requested) and departure procedures, and RNAV “Q” routes to support use of flight management system (FMS)-equipped aircraft that are DME/DME capable. Flight inspection will record the coverage and accuracy of the facilities identified by the screening model, including critical DME facilities, as applicable. Further analysis of the screening model will determine if the data obtained are satisfactory to support the procedure.

4-7-10. Additional Documentation with Baro-VNAV (LNAV/VNAV and RNP), Ground Based Augmentation System (GBAS) and/or Wide Area Augmentation System (WAAS) Instrument Approach Procedures.

a. Enter a 5-digit WAAS/GBAS channel number into the Additional Flight Data block of the FAA 8260-series form [see paragraph 8-6-8l(3)]. A block of WAAS channel numbers is allocated to the AeroNav Products by the National Flight Data Center. GBAS channel numbers must be calculated using a specific frequency that is currently obtained from Region Spectrum Management Office. This paragraph does not apply to RNAV RNP procedures.

b. Enter Approach ID, e.g., W09A/G18A into the Additional Flight Data block of the 8260-series form [see paragraph 8-6-8l(3)]. This is the same as the Reference Path Identifier described in appendix L and is part of the FAS Data Block. This paragraph does not apply to RNAV RNP procedures.

c. Enter “Critical Temp” data as specified in paragraph 4-7-8.

d. Due to limited WAAS coverage at certain locations, a restriction may be required on procedures where WAAS can be used for vertical navigation on a procedure containing LNAV/VNAV minima. This restriction is portrayed on the instrument procedure chart with a negative-type “W” icon that signifies WAAS signal outages may occur daily and that these outages will not be NOTAM’d. At locations where LNAV/VNAV minima are published and it has been determined that there is no WAAS coverage whatsoever, a note will be placed on the approach plate that reads "WAAS VNAV NA." Document this in the Notes section of the Form 8260-3/7A as: "Chart note: WAAS VNAV NA."

e. For RNAV (GPS) procedures where DME/DME RNP-0.3 is not authorized, use "Chart note: DME/DME RNP- 0.3 NA." Where DME/DME RNP-0.3 is authorized, use "Chart note: DME/DME RNP-0.3 Authorized." Where DME/DME RNP-0.3 is authorized only when required facilities are necessary for proper navigation solution, use "Chart note: DME/DME RNP-0.3 Authorized; ABC and XYZ DMEs must be Operational." For RNAV (RNP) procedures, the use of GPS is required; use "Chart note: GPS Required."

f. Document the Approach Route Type Description and Qualifier Description in the Additional Flight Data Block. These descriptions are in the form of an alpha character and found in ARINC Standard 424, Navigation Database. Also see paragraph 8-6-8l(3). For agencies providing a complete ARINC record printout of a procedure on Form 8260-10, these entries are not required.

g. Enter Terminal Arrival Area (TAA) data as directed by Order 8260.58, Volume 4. Determine if the use of "(NoPT)" is appropriate and document accordingly.

h. Document the Waypoint Description Code as defined in ARINC Standard 424 on the applicable FAA 8260-series form [see paragraph 8-6-2a(6)]. For agencies providing a complete ARINC record printout of a procedure on Form 8260-10, these entries are not required.

i. Document the RNP value (e.g., RNP 1.0 or RNP 0.15) used for each segment (except the final segment) in the "To" block of the "Terminal Routes" section on Form 8260-3 [see paragraph 8-6-2a(6)]. For agencies providing a complete ARINC record printout of a procedure on Form 8260-10, these entries are not required. Additionally, when the RNP for feeder, initial and/or intermediate segments are less than standard (RNP 2.0 for feeder, RNP 1.0 for initial and/or intermediate), a note stating the required RNP value must be placed adjacent to the applicable fix. Fix at the beginning of the Feeder Route for less than standard RNP along the route to the IAF only; or IAF (IF, if there is not an Initial segment prior to the IF) for less than standard RNP from the IAF (or IF) to the PFAF. Document this in the "Notes" section of Form 8260-3. Use "Chart planview note at (fix name): (RNP 0.X or 0.XX)."

j. RNAV (RNP) speed restrictions [see Order 8260.58, Volume 5] must be noted on the chart. Use "Chart speed icon in planview at LUCIG: Max 190 KIAS." For a missed approach RF turn, specify the point where the restriction starts and the point at which the restriction is no longer required. Use "Chart planview note at NILCI: Max 200 KIAS until HIVUD."

k. Certain RNP-equipped aircraft may not be capable of flying procedures that contain RF turns, so the entire procedure or segment of the procedure must be annotated with a "RF required" to alert the pilot of this limitation. Use either the note specified in paragraph 4-7-10k(1) or (2):

(1) Use "Chart note: RF Required" when *one* of the following conditions exist:

(a) ALL terminal routes leading to the intermediate fix require an RF turn.

(b) The intermediate, final, or missed approach segments require an RF turn.

OR

(2) If an RNP procedure can be flown from an IAF without RF turns in any segment (including missed approach) and there are RF turns required when initiating the approach from other IAFs on the chart, a note must be placed adjacent to the IAF(s) affected. Use "Chart planview note adjacent to (name) IAF: RF Required."

l. RNP criteria require a wing (semi) span value for narrow and wide body aircraft to be used when calculating the Vertical Error Budget (VEB). When the narrow body value is used, a note must be placed on the approach chart to alert the pilot of this limitation. Use "Chart note: Procedure NA for aircraft with wingspan greater than 136 feet."

m. Procedure development agencies may provide a complete ARINC packet printout on a separate Form 8260-10. The packet must include the procedure record and all supporting records, i.e., waypoints, airport or heliport runways, MSA or TAA, path point, etc. The printout will include column numbers for each record type. See ARINC Record Printout examples in appendix N.

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Chapter 5. Airspace

Section 5-1. Obstruction Evaluation (OE)

5-1-1. General. The Title 14 Code of Federal Regulations (14 CFR), Part 77, requires that the Administrator be notified prior to the construction or alteration of structures that might present a hazard to flight. Form 7460-1, Notice of Proposed Construction or Alteration, is the medium for that notification of construction or alteration.

5-1-2. Responsibility and Processing of Form 7460-1. The Obstruction Evaluation Group, AJV-15, has the responsibility to process all Forms 7460-1 in accordance with 14 CFR Part 77 and Order JO 7400.2, Procedures for Handling Airspace Matters. In this regard, AeroNav Products must ensure a complete evaluation of the effect the proposed construction or alteration will have on IFR procedures, including the visual portion of a final approach segment, is provided to Air Traffic. The complete evaluation includes evaluation of the effect upon existing and proposed instrument flight procedures and the effects of airport plans on file to instrument flight procedures as they relate to the proposed object. AeroNav Products must also assist Air Traffic in reconciling possible discrepancies in IFR findings made by the military services. AeroNav Products must limit their response to findings of "IFR Effect" or "No IFR Effect." The process of an obstacle evaluation is captured within the Internet Obstacle Evaluation/Airport Airspace Analysis (*i*OE/AAA) system. All comments and evaluations should be captured within this system to ensure consideration.

5-1-3. Review of Notices. AeroNav Products and Flight Standards personnel, when becoming involved in the evaluation of Notices of Construction or Alteration, should be thoroughly familiar with applicable parts of Order JO 7400.2. The RNGB evaluates OE cases for effect in accordance with the Code of Federal Regulations and policies set forth in Order 8900.1, Flight Standards Information Management Systems (FSIMS); FAA 8260-series Orders; Order JO 7400.2, and other applicable directives. The effect of a proposed structure on aircraft operations must be fully stated. Consultation with the appropriate FSDO and/or FIOG may be helpful in formulating comments/recommendations. In all cases, the primary responsibility and the first consideration is set forth in 14 CFR Part 77, which states: "Evaluate the effect of the proposed construction or alteration on safety in air commerce and the efficient use and preservation of the navigable airspace and of airport traffic capacity at public use airports" (14 CFR Part 77.5).

5-1-4. Adjustments to Instrument Flight Procedures. When requested, AFS specialists may provide recommendations regarding what procedure adjustments to mitigate the effect. AeroNav Products will be notified of when construction will begin and appropriate action (e.g., NOTAM action) will be initiated. AeroNav Products must not amend a procedure until receipt of the "Actual Notice of Construction," or other notification relative to an obstacle that will have a procedural effect.

Section 5-2. Designation of Controlled Airspace

5-2-1. General.

a. To afford separation from other aircraft, all instrument flight procedures, to include the Terminal Arrival Area (TAA), must be contained in controlled airspace to the maximum extent possible within the capabilities of the ATC system. DF procedures are exempt from this policy. For special procedures, refer to paragraph 4-1-3c.

b. Order JO 7400.2 clarifies that a 300-foot buffer should be taken into consideration when computing airspace requirements for IFR procedures. Therefore, a 300-foot buffer has been included in the references to the 1000-foot and 1500-foot points in paragraph 5-2-4.

5-2-2. Air Traffic Responsibility. It is the responsibility of the applicable Air Traffic Service Area to determine the type and amount of controlled airspace that can be established to encompass instrument flight procedures, including departures from the airport.

a. If the TAA overlies Class B airspace, in whole or in part, the ATC facility exercising control responsibility for the airspace may recommend minimum TAA sector altitudes. It is the responsibility of the ATC facility providing approach control service for the airport to resolve TAA altitude and overlapping airspace issues with adjoining ATC facilities. Modify the TAA to accommodate controlled/restricted/warning areas as appropriate.

b. When notified that an RNAV approach and a standard TAA are being initiated for an airport not underlying controlled airspace, the applicable Air Traffic Service Area must initiate rulemaking action to establish a 1200 feet above ground level Class E airspace area with an appropriate radius of the ARP to accommodate the TAA. If a modified TAA is proposed, the airspace will be sized to contain the TAA. The TAA will not be charted or implemented until controlled airspace actions are completed.

5-2-3. AeroNav Products Action.

a. Determine airspace requirements for all original IAPs. Analyze IAP amendments, which affect any fix, course, or altitude to determine if existing airspace must be extended or can be reduced. Similarly, analyze IAP cancellations to determine if existing airspace can be reduced. AeroNav Products must coordinate with the applicable Air Traffic Control facility to determine if further procedure development needs to be delayed pending any airspace action.

b. AeroNav Products analysis, in accordance with the provisions of this section, must include, in part, a determination of the minimum required length and width of the Class B/C/D/E Surface Area extensions, and/or any Class E 700-foot airspace extension.

c. Document data, as described in paragraph 5-2-4k, on the Form 8260-9, Standard Instrument Approach Procedure Data Record, supports the IAP being designed. [See paragraph 8-7-1c "Remarks" for forms completion guidance.] Forward this data to the appropriate Air Traffic Service Area.

Note: This information may also be entered on any form considered acceptable by AeroNav Products and the Air Traffic Service Area. However, to avoid loss of data, it is strongly recommended that AeroNav Products make the entry in Form 8260-9, *Remarks*, for permanent record. The statement must reflect either "No additional airspace required" or "See attached airspace letter."

5-2-4. Terminal Airspace. The following criteria must be used to determine the required minimum length and width of Class B/C/D/E Surface Area and/or Class E 700-foot airspace extensions.

a. The requirement to designate controlled airspace is contained in Order JO 7400.2.

b. The nearest 100-foot principle must be applied to determine the height of the controlling terrain. Example: A terrain elevation of 249.99 feet MSL would be considered as 200 feet; 250.00 feet MSL as 300 feet.

Note: Use of the following computation methods *must* consider the primary area of all applicable segments of any IAP under analysis. Any arrival extensions must be the result of "worst-case scenario" analyses, reflecting the greatest amount of controlled airspace required.

c. Class B/C/D/E Surface Area Extensions. Establish an extension of the Class B/C/D/E Surface Area whenever an IAP authorizes descent to an altitude less than 1000 feet above the surface at a point outside the basic surface area. Where multiple approach procedures are established utilizing the same approach course, the extension length and/or width must be based on the approach, or approach combinations, requiring the greatest length and/or width respectively. When designing instrument procedures at airports with Class B airspace, it is important to note the requirements of Order JO 7400.2, paragraph 15-2-3, which states that the Class B vertical limit "*...may be adjusted to coincide with runway alignment, adjacent airports, other regulatory airspace, etc., but must encompass, as a minimum, all final approach fixes and minimum altitudes at the final approach fix*." This requirement includes the glide slope/glide path intercept point for vertically guided procedures. Any deviation to this requirement must be approved by Airspace Services, AJV-1.

(1) Procedures with Vertical Guidance. Where ILS, WAAS (LPV), GBAS, LNAV/VNAV, etc. procedures are involved, the 1000-foot point is established as follows:

(a) Determine the elevation of the highest terrain in the final approach (primary area, or the "W" and "X" surfaces, as appropriate).

(b) Add 1000 feet to figure 5-2-1 and subtract the MSL elevation of the TCH.

(c) Divide the result by the GS tangent using formula 5-2-1.

Formula 5-2-1.

$$d = \frac{a - (b + c) + 1000}{\tan(\theta)}$$

Where:

a = highest terrain
b = THRe
c = TCH
θ = Glidepath Angle
D = Dist (feet) THR to 1000-foot point

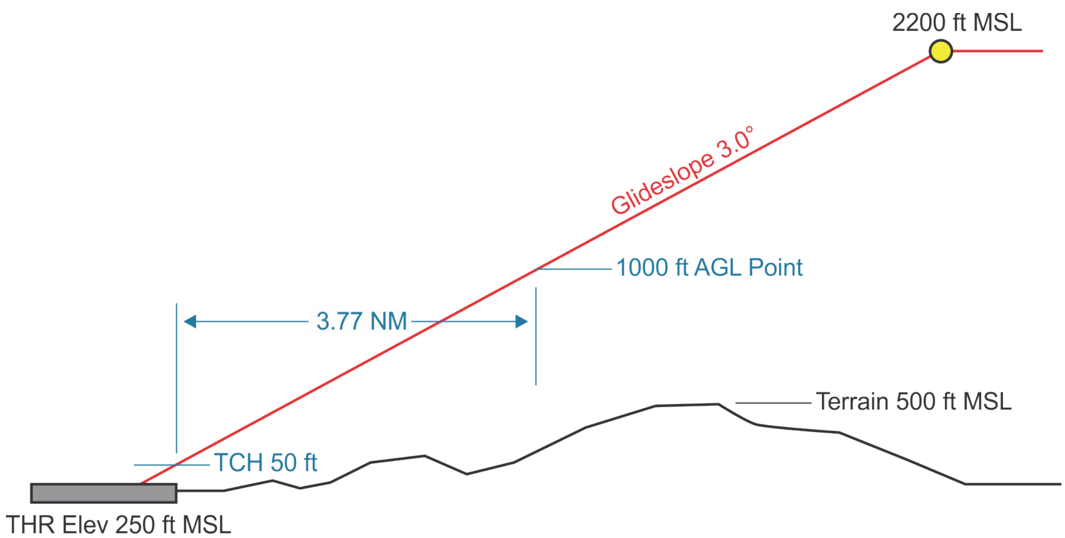
Example 5-2-1.

$$289639 = \frac{500-(250+50)+1000}{.05241}$$

22896.39 = 3.77 NM = 1000 feet

Note: To compute the 1500-foot point, substitute 1500 for 1000 in formula 5-2-1.

Figure 5-2-1.



(d) When the GS (or EL) is inoperative, the altitude for flying the LOC-only (or AZ-only) may require an additional Class B/C/D/E Surface Area extension. Therefore, the 1000-foot point for LOC-only (or AZ-only) should be determined in the same manner as for nonprecision SIAPs [see paragraphs 5-2-4c(2) through (4)].

(e) To locate a 1000-foot point in a segment prior to the FAF, apply the provisions of paragraphs 5-2-4c(2) through (5).

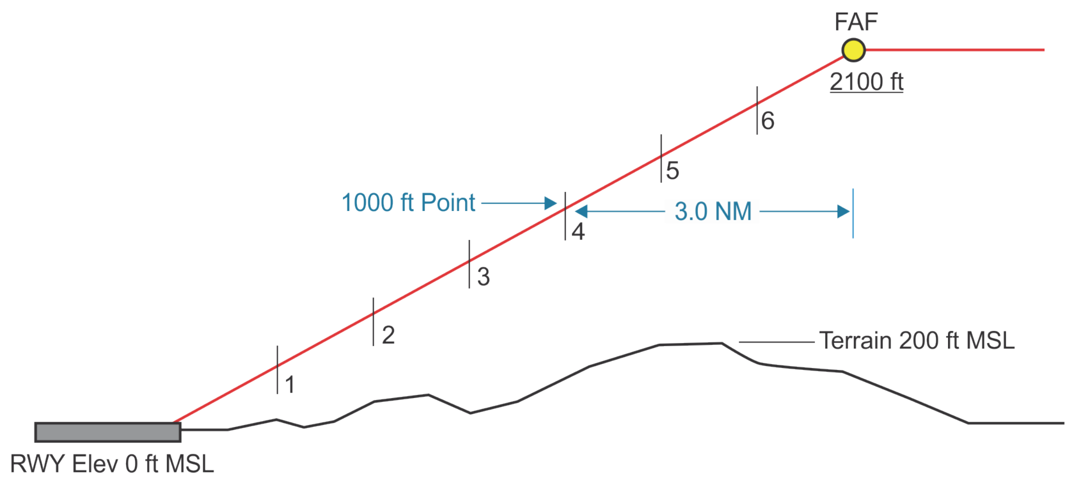
(2) Nonprecision approach procedures (NoPT w/FAF):

(a) When the SIAP specifies a minimum altitude at the FAF greater than 1000 feet above the highest terrain in the final segment, the 1000-foot point is assumed to be inbound from the FAF at a distance determined by application of a descent gradient of 500 feet/NM for distances in excess of 7 NM from runway threshold, and 300 feet/NM for distances at/less than 7 NM from the runway threshold; i.e., use both gradients to compute the 1000-foot point when the final segment is longer than 7 NM [see figures 5-2-2 and 5-2-3].

Example 5-2-2.

1000 feet AGL + 200 feet Terrain = 1200 feet MSL
2100 feet MSL - 1200 feet = 900 feet
900 feet / 300 feet/NM = 3 NM
7(FAF) – 3 = 4 NM = 1000-foot Point

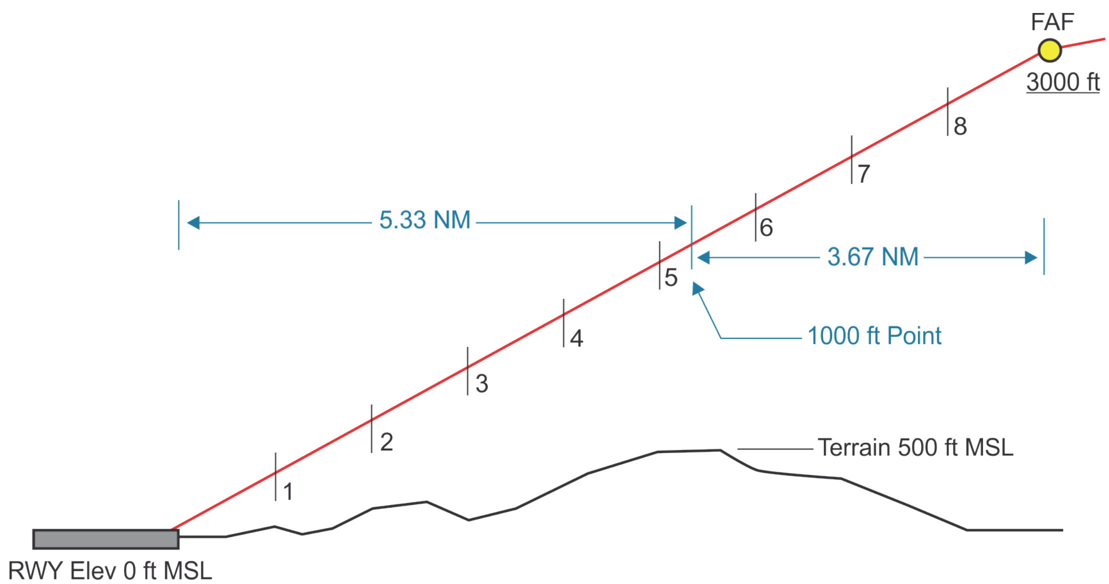
Figure 5-2-2.



Example 5-2-3.

1000 feet AGL + 500 feet Terrain = 1500 feet MSL
3000 feet MSL - 1500 feet = 1500 feet
$9(FAF) - 7 = 2$ NM × 500 feet/NM = 1000 feet
1500 feet - 1000 feet / 300 feet/NM = 1.67 NM
7 NM - 1.67 NM = 5.33 NM = 1000-foot Point

Figure 5-2-3.

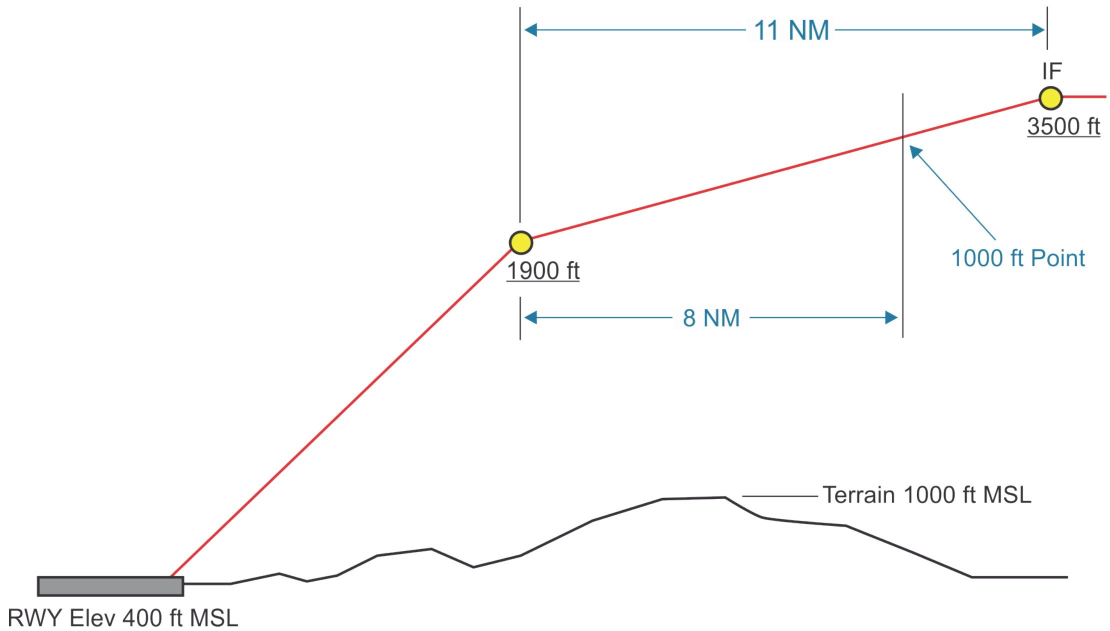


(b) When the SIAP specifies a minimum altitude at the IF greater than 1000 feet above the highest terrain in the intermediate segment, the 1000-foot point is assumed to be inbound from the IF at a distance determined by application of a 500 feet/NM descent from the IF [see figure 5-2-4].

Example 5-2-4.

1000 feet AGL + 1000 feet Terrain = 2000 feet MSL
3500 feet (IF) - 2000 feet = 1500 feet
1500 feet / 500 feet/NM = 3 NM
11 NM - 3 NM = 8 NM = 1000-foot Point

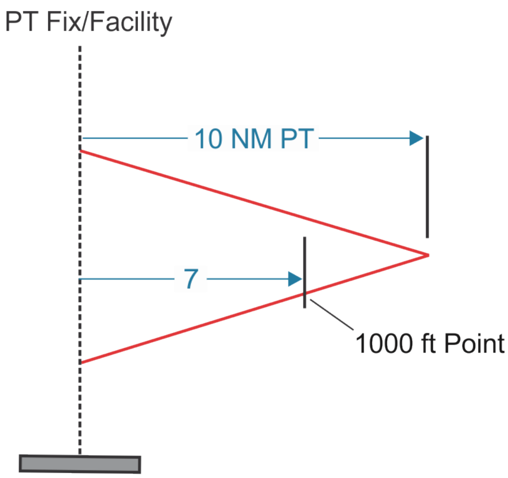
Figure 5-2-4.



(3) Nonprecision Approach Procedures with Procedure Turn (PT):

(a) Procedure Turn Over Facility (on-airport, no-FAF): Where a facility is located on the airport (NDB, VOR, VORTAC) and the SIAP does not incorporate FAF, the 1000-foot point is assumed to be on the PT inbound leg, 7 NM from the facility for a 10-mile PT, or 5 NM from the facility for a 5-mile PT [see figure 5-2-5].

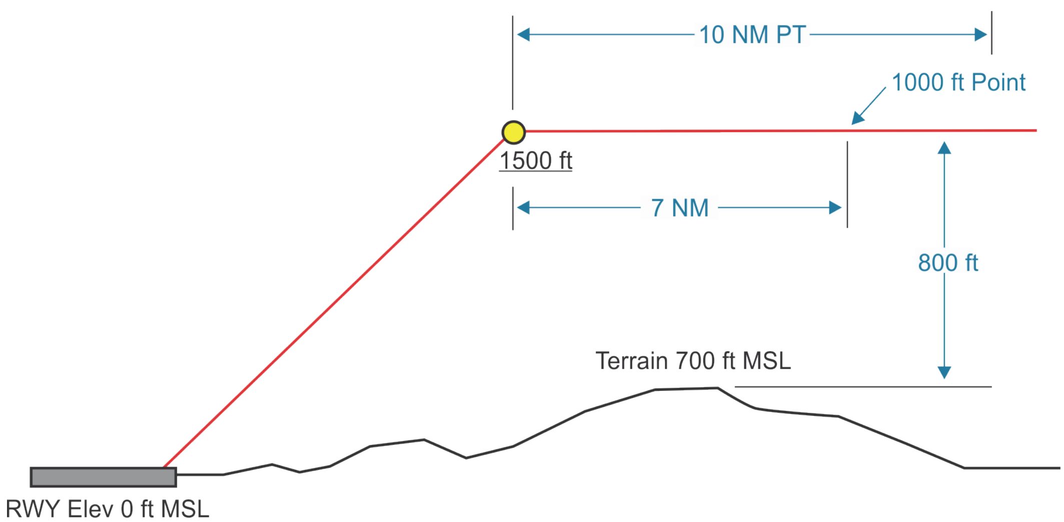
Figure 5-2-5.



(b) Procedure Turn Over FAF:

1. When the SIAP specifies a minimum altitude at the FAF less than 1000 feet above the highest terrain in the intermediate segment, the 1000-foot point is assumed to be 7 NM outside the FAF on the PT inbound leg for a 10-mile PT, and 5 NM on the PT inbound leg for a 5-mile PT [see figure 5-2-6].

Figure 5-2-6.



2. When the SIAP specifies a minimum altitude at the FAF less than 1000 feet above the highest terrain in the final segment, *but* greater than 1000 feet above the highest terrain in the intermediate segment, establish the 1000-foot point at the FAF.

3. When the SIAP specifies a minimum altitude at the FAF greater than 1000 feet above the highest terrain in the final segment, establish the 1000-foot point as per paragraph 5-2-4c(2)(a).

(c) PT Over Facility/Stepdown Fix *after* the FAF:

1. Where the SIAP specifies a minimum altitude at the FAF less than 1000 feet above the highest terrain in the intermediate segment, the 1000-foot point is assumed to be outside the FAF on the PT inbound leg at a distance determined by application of a 200 feet/NM descent to the FAF [see figure 5-2-7].

Example 5-2-5.

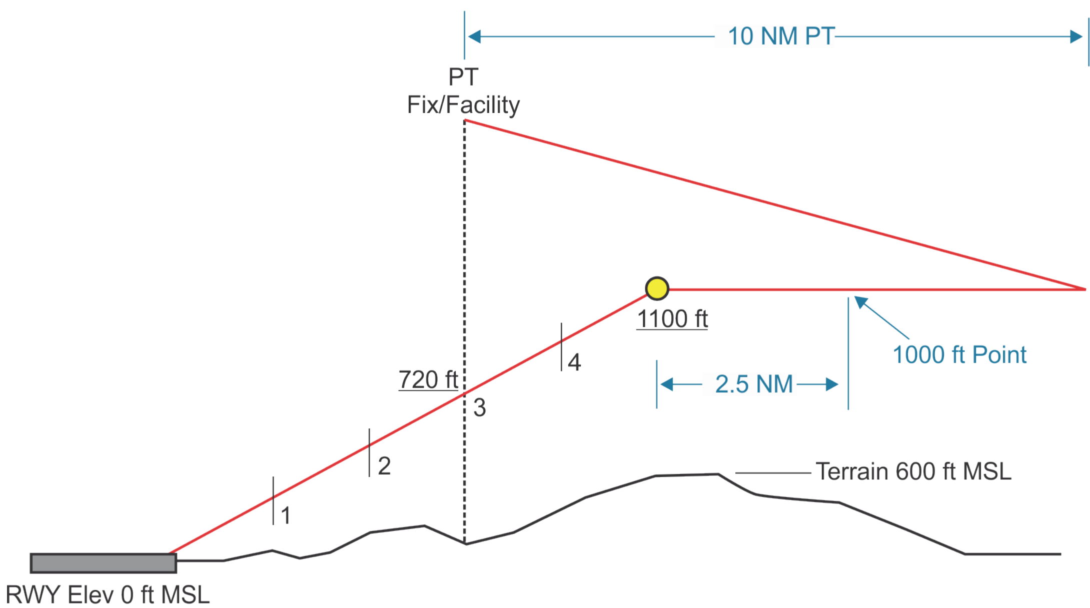
1000 feet AGL + 600 feet Terrain = 1600 feet MSL

1600 feet - 1100 feet (FAF) = 500 feet

500 feet / 200 feet/NM = 2.5 NM

5 NM (FAF) + 2.5 = 7.5 NM = 1000-foot Point

Figure 5-2-7.

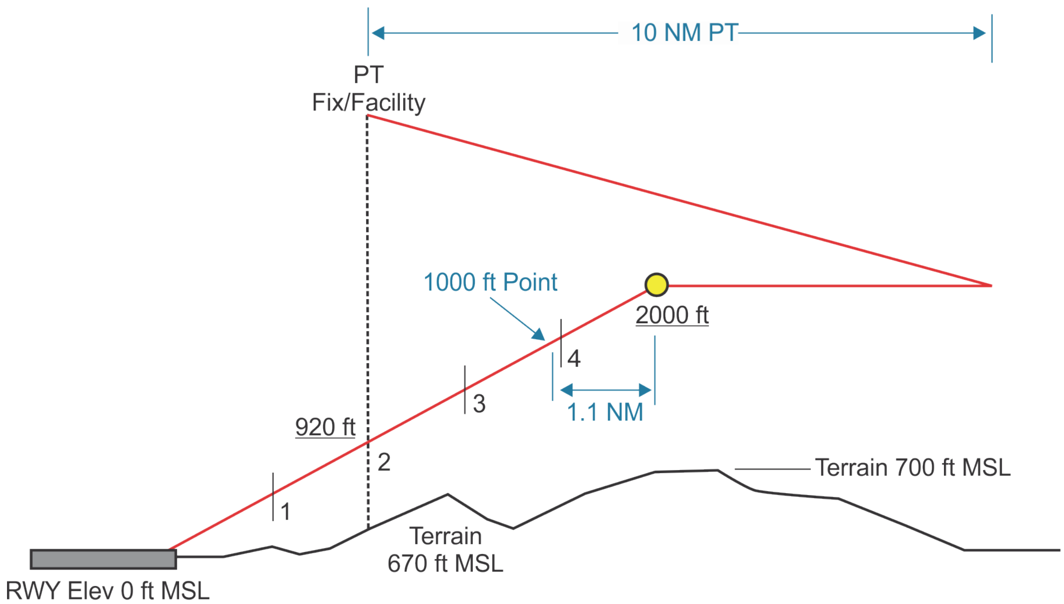


2. Where the SIAP specifies a minimum altitude at the final stepdown fix less than 1000 feet above the highest terrain in the final segment, while specifying a minimum altitude at the FAF greater than 1000 feet above the highest terrain in the intermediate segment, the 1000-foot point is assumed to be inbound from the FAF at a distance determined by application of a 300 feet/NM descent gradient from the FAF. Use 500 feet/NM descent gradient for the distance that the FAF exceeds 7 NM from the threshold [see figure 5-2-8].

Example 5-2-6.

1000 feet AGL + 670 feet Terrain = 1670 feet MSL
2000 feet (FAF) - 15670 feet = 330 feet
330 feet / 300 feet/NM = 1.1 NM
5 NM (FAF) - 1.1 NM = 3.9 NM = 1000-foot Point

Figure 5-2-8.

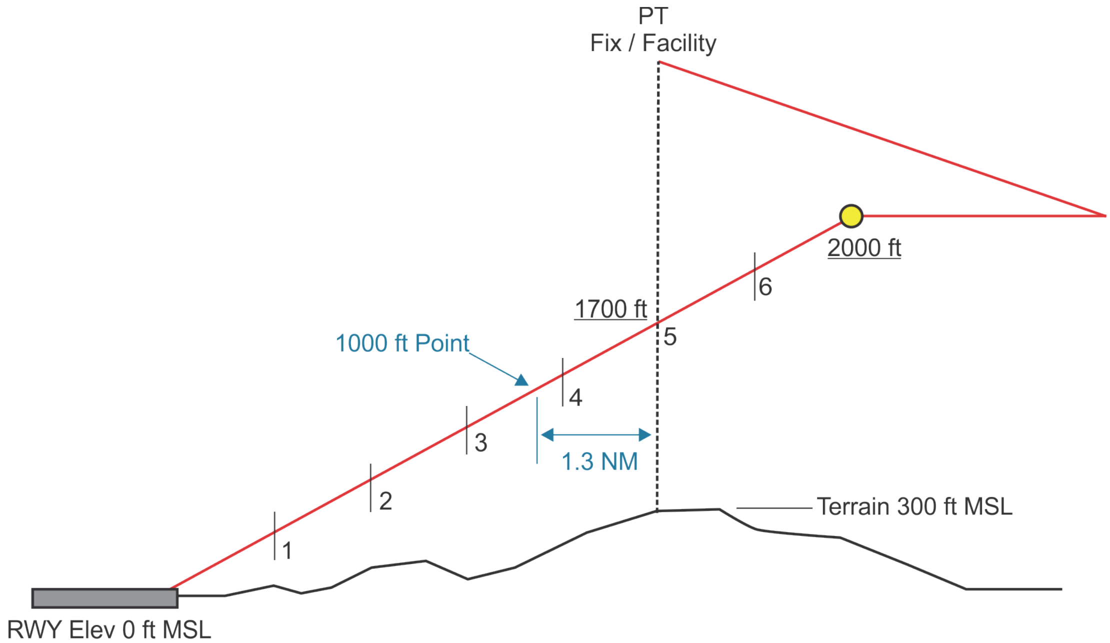


3. Where the SIAP specifies a minimum altitude at the final stepdown fix greater than 1000 feet above the highest terrain in the final segment, the 1000-foot point is assumed to be inbound from the final stepdown fix at a distance determined by application of a 300 feet/NM descent gradient from the final stepdown fix. Use 500 feet/NM descent gradient for the distance that the stepdown fix exceeds 7 NM from the threshold [see figure 5-2-9].

Example 5-2-7.

1000 feet AGL + 300 feet Terrain = 1300 feet MSL
1700 feet (Stepdown) - 1300 feet = 400 feet
400 feet / 300 feet/NM = 1.3 NM
5 NM (S/D) - 1.3 NM = 3.7 NM = 1000-foot Point

Figure 5-2-9.

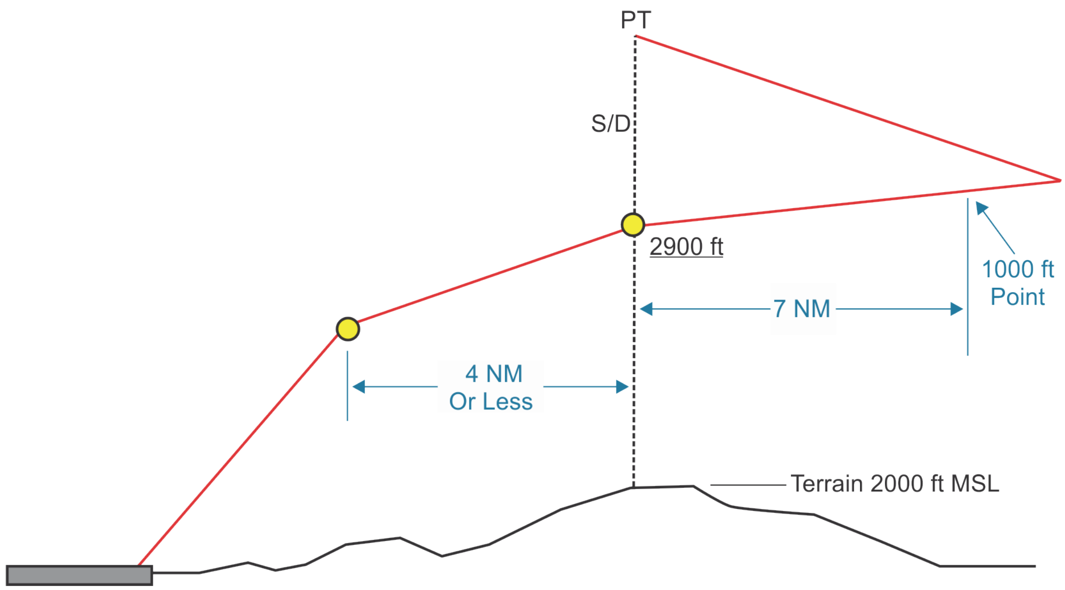


(d) Procedure Turn Over Step-down *prior* to the FAF:

Condition: Distance between the stepdown fix/facility and the FAF less than 5 NM - see Order 8260.3, Volume 1, paragraph 244d.

1. If the PT completion altitude is equal to or greater than, *but* the minimum altitude at the stepdown fix/facility is less than 1000 feet above the highest terrain in the segment underlying the course reversal, the 1000-foot point is assumed to be 7 miles from the stepdown fix/facility on the PT inbound leg [see figure 5-2-10].

Figure 5-2-10.

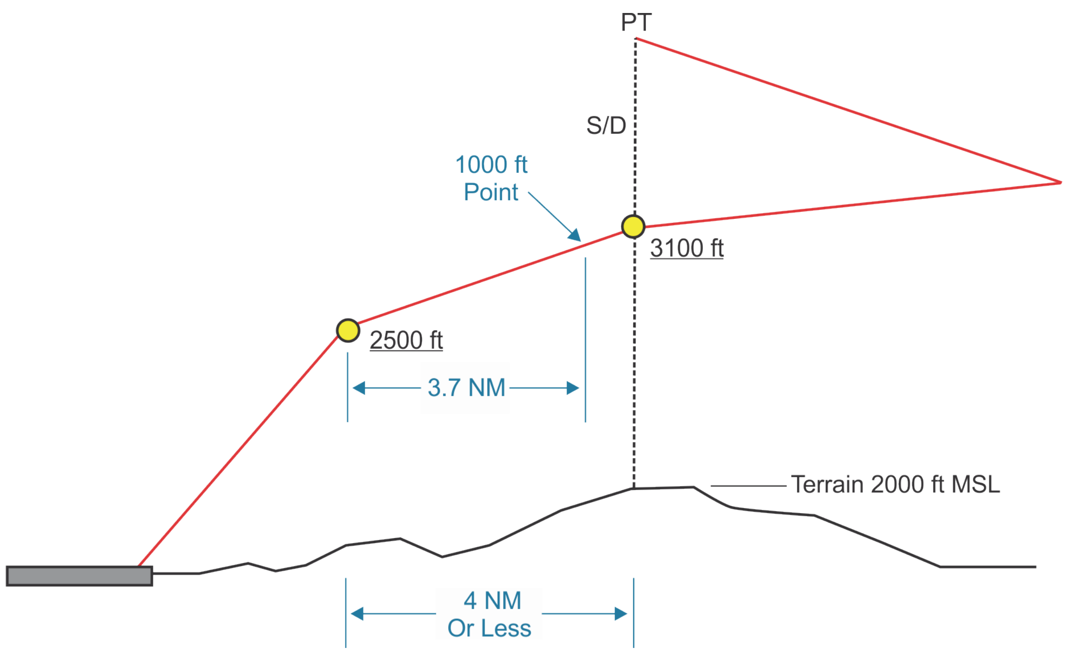


<u>2.</u> If the minimum altitude at the stepdown fix/facility is greater than 1000 feet above the highest terrain in the segment between the fix/facility and the FAF, the 1000-foot point is assumed to be inbound from the fix/facility at a distance determined by application of a 300 feet/NM descent from the stepdown fix/facility [see figure 5-2-11].

Example 5-2-8.

1000 feet AGL + 2000 feet Terrain = 3000 feet MSL
3100 feet (Stepdown) - 3000 feet = 100 feet
100 feet / 300 feet/NM = 0.3 NM
4 NM (S/D) - 0.3 NM = 3.7 NM = 1000-foot Point

Figure 5-2-11.



3. If the 1000-foot point is inside the FAF, apply methodology in paragraph 5-2-4c(2)(a).

Condition: Distance between the stepdown fix/facility and the FAF greater than 5 NM - see Order 8260.3, Volume 1, paragraph 244e. Since the fix/facility becomes the IF in this case, apply methodology in paragraph 5-2-4c(3)(e).

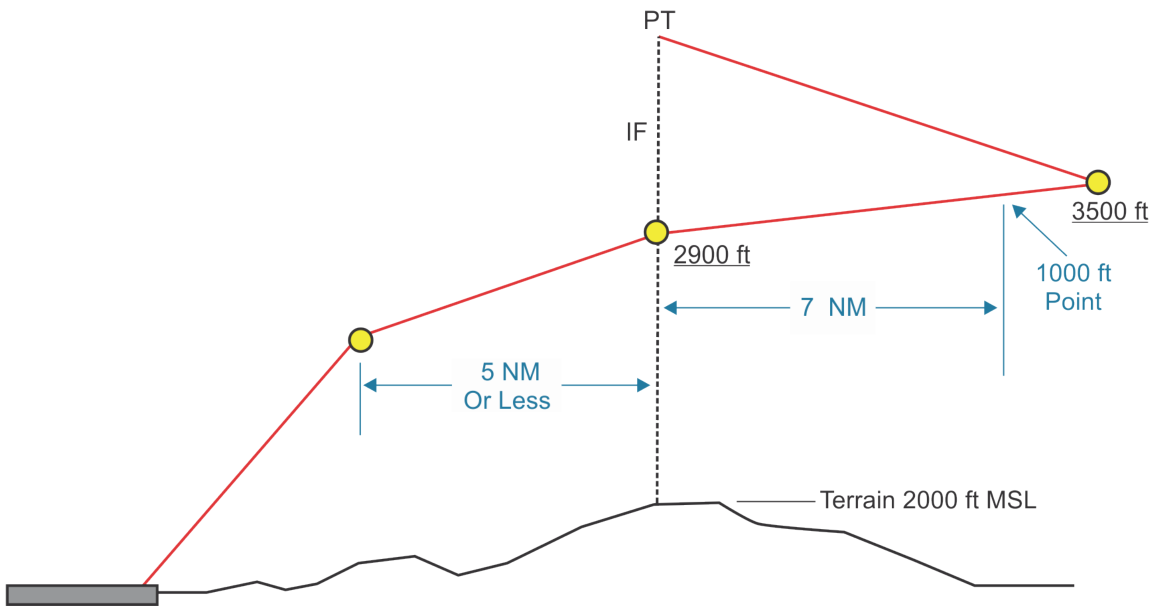
Note: Where the distance between the stepdown fix/facility and the FAF equals 5 NM, either Order 8260.3, Volume 1, paragraph 244d or 244e may be applied; use the appropriate guidance above or below accordingly.

(e) PT over the IF. (Intermediate Fix)

1. If the PT completion altitude is less than 1000 feet above the highest terrain in the segment underlying the course reversal, the 1000-foot point is in the PT maneuvering area.

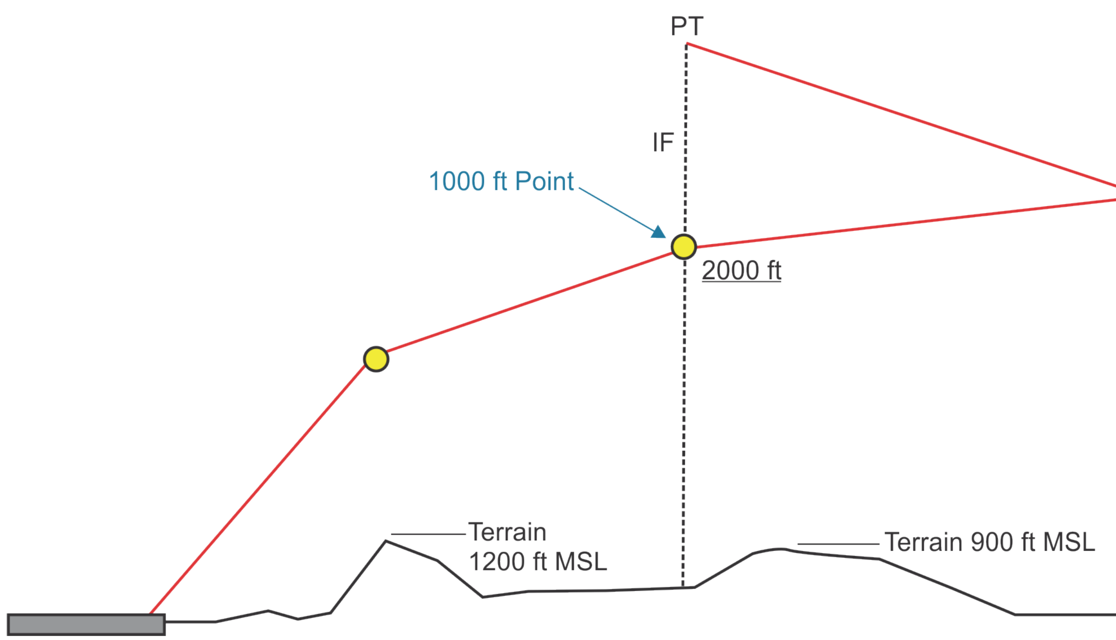
2. If the PT completion altitude is greater than or equal to 1000 feet above the highest terrain in the segment underlying the course reversal, the 1000-foot point is assumed to be 7 NM from the PT fix/facility on the PT inbound leg [see figure 5-2-12].

Figure 5-2-12.



3. If the minimum altitude at the IF is greater than 1000 feet above the highest terrain in the segment underlying the course reversal, *but* less than or equal to 1000 feet above the highest terrain in the intermediate segment, the 1000-foot point is at the IF [see figure 5-2-13].

Figure 5-2-13.

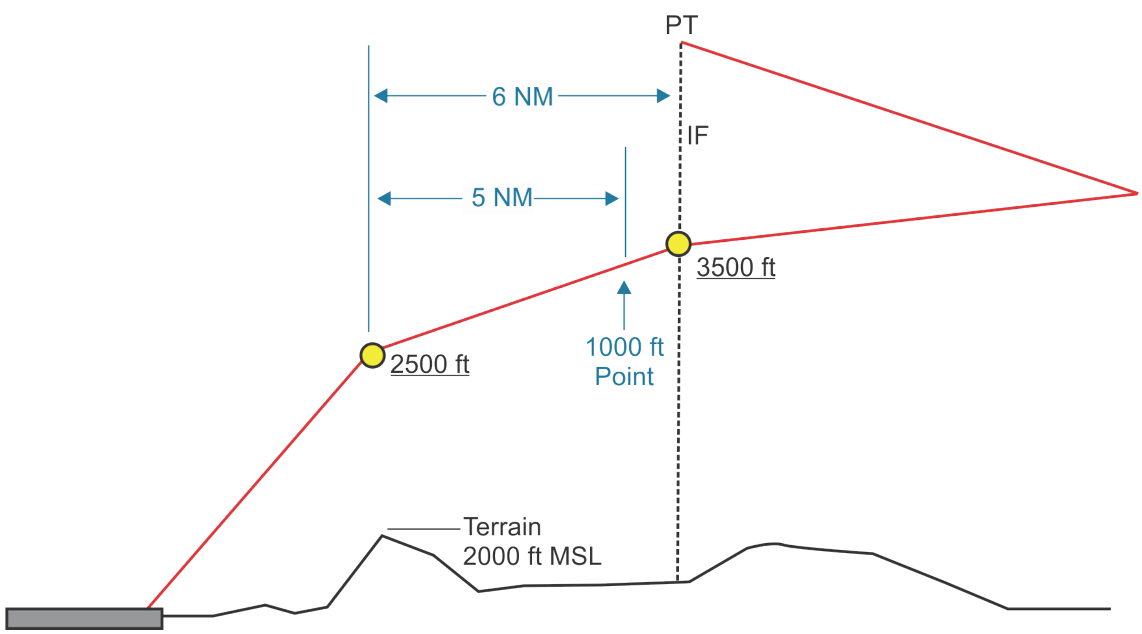


4. If the minimum altitude at the IF is greater than 1000 feet above the highest terrain in the intermediate segment, the 1000-foot point is assumed to be inbound from the IF at a distance determined by application of a 500 feet/NM descent from the IF [see figure 5-2-14].

Example 5-2-9.

1000 feet AGL + 2000 feet Terrain = 3000 feet MSL
3500 feet (IF) - 3000 feet = 500 feet
500 feet / 500 feet/NM = 1 NM
6 NM (S/D) - 1 NM = 5 NM = 1000-foot Point

Figure 5-2-14.



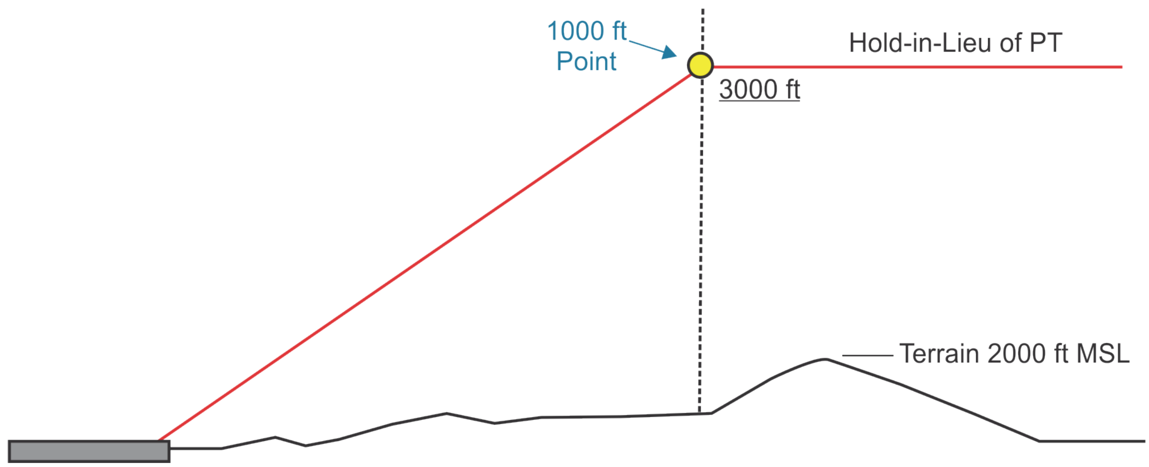
5. If the 1000-foot point is inside the FAF, apply methodology in paragraph 5-2-4c(2)(a).

(4) Hold-in-Lieu-of Procedure Turn:

(a) At the FAF:

1. If the minimum altitude at the FAF is 1000 feet above the highest terrain in the final segment, the 1000-foot point is at the FAF [see figure 5-2-15].

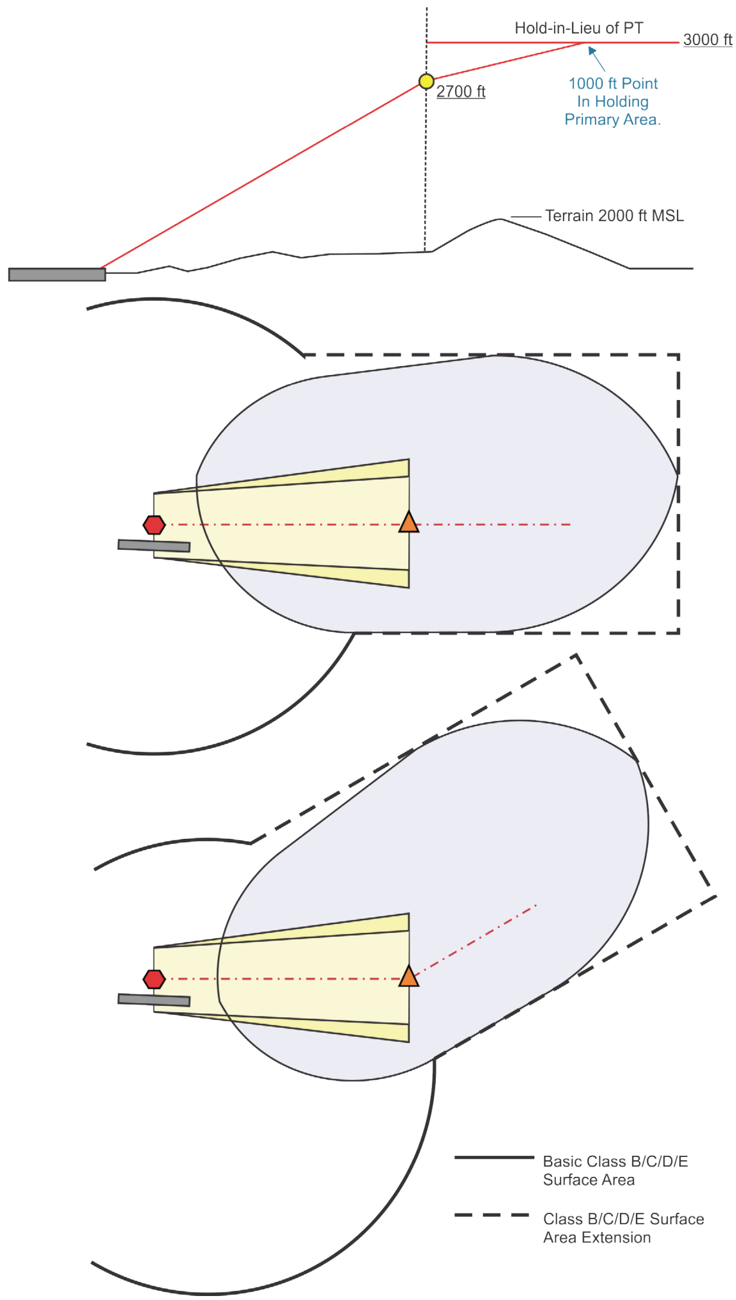
Figure 5-2-15.



2. If the minimum altitude at the FAF is greater than 1000 feet above the highest terrain in the final segment, apply the methodology in paragraph 5-2-4c(2)(a).

3. If the minimum hold-in-lieu-of PT altitude is equal to or greater than 1000 feet above the highest terrain underlying the course reversal, *but* the minimum altitude at the FAF is less than 1000 feet above the highest terrain underlying the course reversal, the 1000-foot point is assumed to be in the holding pattern area. The Class B/C/D/E Surface Area extension must encompass the entire holding pattern primary area [see figure 5-2-16].

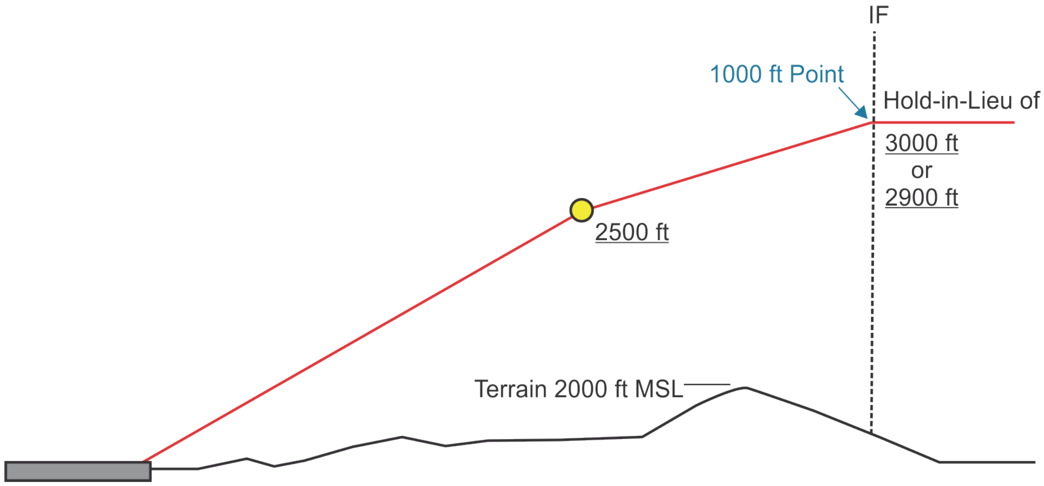
Figure 5-2-16.



(b) At the IF.

1. If the minimum altitude at the IF is less than or equal to 1000 feet above the highest terrain in the intermediate segment, the 1000-feet point is at the IF [see figure 5-2-17].

Figure 5-2-17.

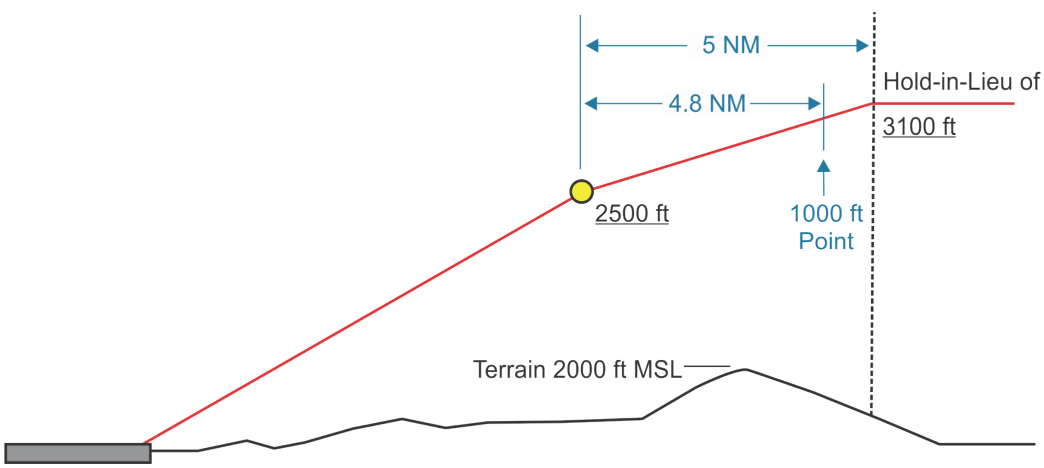


2. If the minimum altitude at the IF is greater than 1000 feet above the highest terrain in the intermediate segment, the 1000-foot point is assumed to be inbound from the IF at a distance determined by application of a 500 feet/NM descent from the IF [see figure 5-2-18].

Example 5-2-10.

1000 feet AGL + 2000 feet Terrain = 3000 feet MSL
3100 feet (IF) - 3000 feet = 100 feet
100 feet / 500 feet/NM = 0.2 NM
5 NM (IF) - 0.2 = 4.8 NM = 1000-foot Point

Figure 5-2-18.



3. If the minimum altitude at the IF *and* at the FAF are greater than 1000 feet above the highest terrain in the intermediate segment, apply the methodology in paragraph 5-2-4c(2).

(5) General. For PT distances greater than 10 NM (out to 15 NM maximum), increase the distance to the assumed 1000-foot point 1 NM for each mile in excess of 10 NM.

d. Class B/C/D/E Surface Area Extension Width.

(1) ILS, WAAS, GBAS, LNAV/VNAV. The width of the Class B/C/D/E Surface Area extension for ILS, WAAS, GBAS, LNAV/VNAV is established by determining the width of the final approach primary TERPS area at the point the aircraft reaches 1000 feet AGL [see paragraph 5-2-4c(1)]. The width of the extension must not be less than 2 NM (one mile each side of the localizer/azimuth course) regardless of the width of the precision primary area at the 1000-foot point

(a) Refer to figure 5-2-19. If the aircraft reaches 1000 feet AGL at point A, the width of the surface area at point A is the same as the measured width of the procedure trapezoid at this point. Apply the provisions of paragraph 5-2-4c(1) to determine the distance from the threshold to the 1000-foot point; then subtract 200 feet. The resultant figure is then used as "D" in the precision area for determining the half-width of the precision primary area: 1/2W = .10752D + 700 feet.

Formula 5-2-2.

$$D = d - 200 \text{ feet}$$

Where:

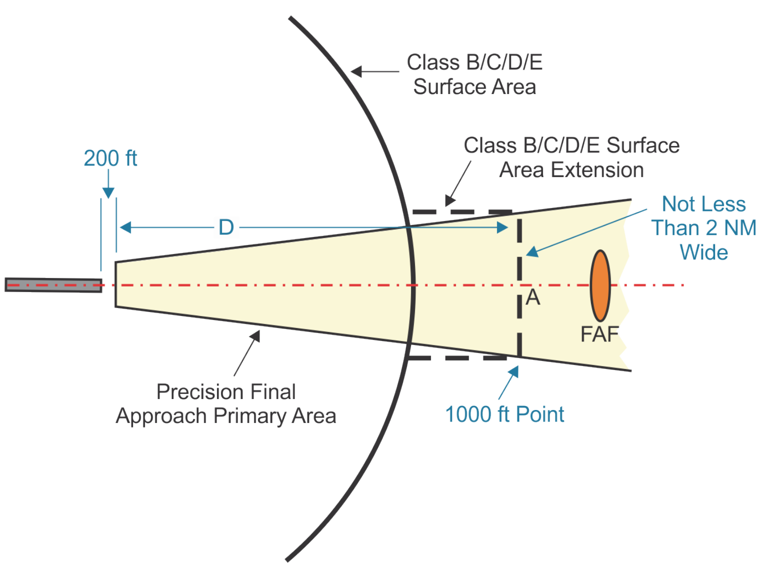
D = Dist (feet) THR to 1000-foot point

Example 5-2-11.

1/2 Width = .10752D + 700 feet

(1/2 Width is not less than 1 NM)

Figure 5-2-19.



(b) Where the 1000-foot point is located in the intermediate segment, additional analysis is required. Since the ILS FAF and the underlying LOC FAF may not be collocated, the respective intermediate segments may have different widths at any particular distance from the FAF. The width of the Class B/C/D/E Surface Area extension at the 1000-foot point must be the greater of the two segment widths. Use the guidance in Order 8260.3, Volume 1, and chapter 2 for calculating the respective widths.

(2) Nonprecision. The width of the Class B/C/D/E Surface Area extension for other than ILS is established by measuring the width of the final approach primary area at the widest point between the surface area boundary and the 1000-foot point. For final segments that expand toward the basic surface area boundary, the width is measured perpendicularly to centerline at the point where the course crosses the surface area boundary. Where Class B/C/D/E Surface Area has not been established prior to IAP development, obtain a tentative surface area dimension from the applicable Air Traffic Service Area for application of this paragraph. The width of the extension must not be less than 2 NM (1 NM each side of segment centerline) [see figure 5-2-20].

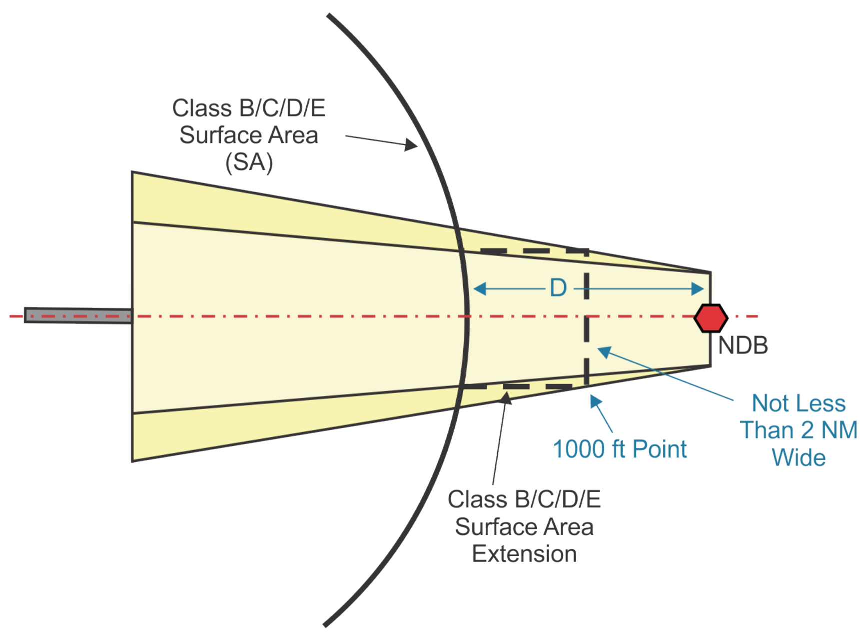
Example 5-2-12.

Centerline Dis NDB to SA = D (NM)

1/2 Width = .0833D + 1.25 NM

(1/2 Width is not less than 1 NM)

Figure 5-2-20.



Where the 1000-foot point is located in the intermediate segment, determine the segment width abeam the 1000-foot point using the appropriate guidance in Order 8260.3, Volume 1, and chapter 2.

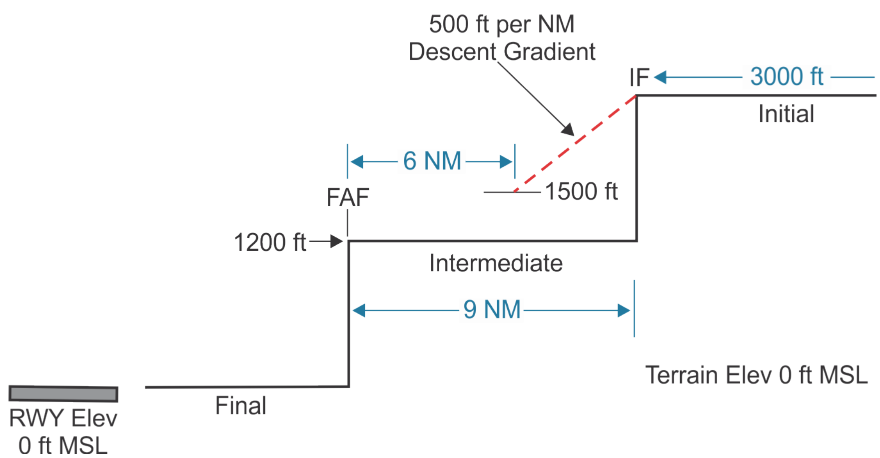
e. Class E 700-foot Airspace Arrival Extensions. A 700-foot Class E airspace extension should be established whenever a SIAP authorizes descent to less than 1500 feet AGL. The width of the Class E 700-foot airspace extension is established equal to the width of the initial, intermediate, or final primary area at the widest point between the basic Class E 700-foot airspace and the point where the aircraft descends below 1500 feet AGL. The methods used to locate the 1500-foot point in a precision final are similar to those used to locate the 1000-foot point. Refer to paragraph 5-2-4c (1) and use 1500 feet in place of 1000 feet. For other precision segments, or for LOC/AZ, refer to paragraphs 5-2-4e (1) through (3).

(1) No PT: Apply the methodology contained in paragraphs 5-2-4c (2) (a) and (b); except, where a 300 feet/NM descent gradient was used, apply a 500 feet/NM for the 1500 feet determination. In figure 5-2-21, the aircraft will reach 1500 feet AGL at 6 miles prior to the FAF using a 500-foot /NM descent gradient from the IF [see figure 5-2-21].

Example 5-2-13.

3000 feet MSL - 1500 feet = 1500 feet
1500 feet / 500 feet/NM = 3 NM
9 NM (IF) - 3 = 6 NM = 1500-foot Point

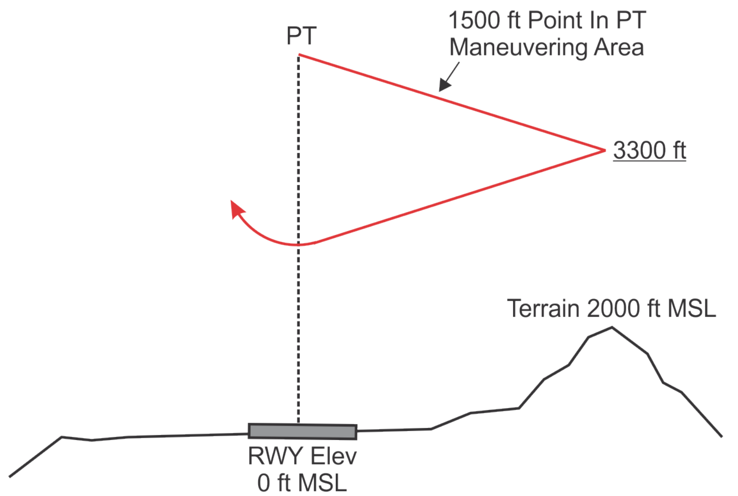
Figure 5-2-21.



(2) Procedure Turn:

(a) On-Airport No FAF. For a 10-mile PT, the 1500-foot point is assumed to be 7 miles from the PT fix or facility on the PT inbound leg. Similarly, for a 5-mile PT, the 1500-foot point is assumed to be 5 miles from the PT fix or facility. *However*, if the PT completion altitude is less than 1500 feet above the highest terrain in the final segment underlying the course reversal, then the 1500-foot point is in the PT maneuvering area [see paragraph 5-2-4k(7) and figure 5-2-22].

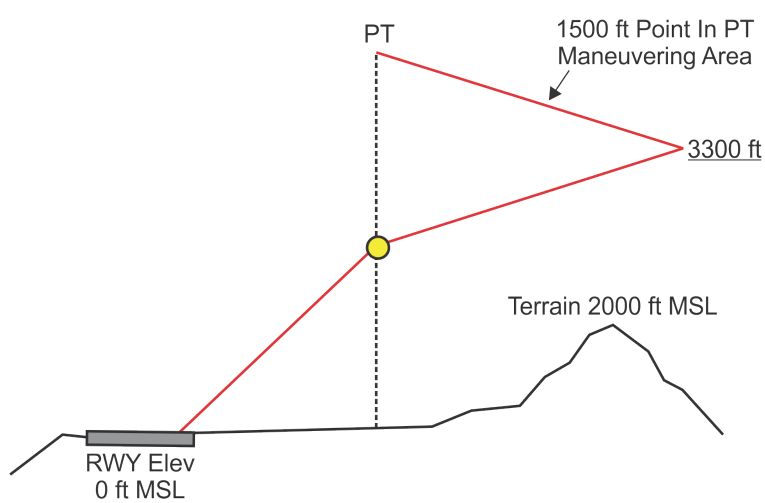
Figure 5-2-22.



(b) PT Over the FAF.

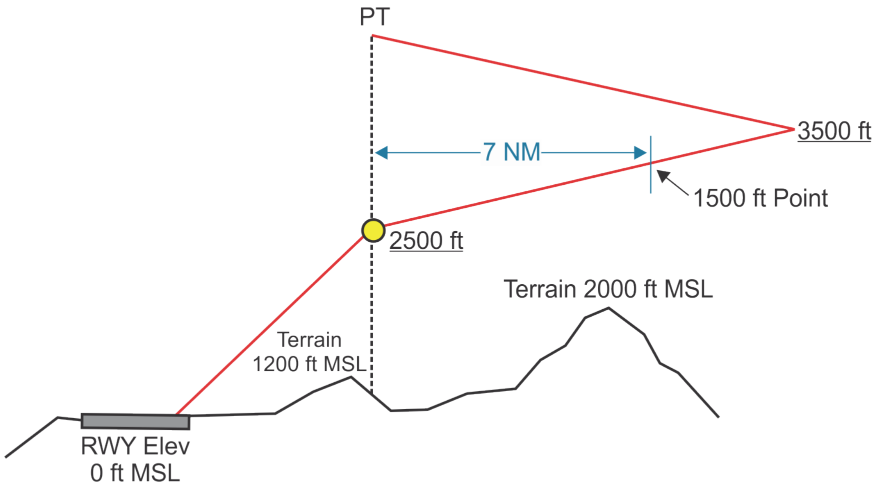
1. If the PT completion altitude is less than 1500 feet above the highest terrain in the intermediate segment, the 1500-foot point is in the PT maneuvering area [see paragraph 5-2-4k(7) and figure 5-2-23].

Figure 5-2-23.



2. If the PT completion altitude is 1500 feet or more above the highest terrain in the intermediate segment, the 1500-foot point is assumed to be 7 miles from the PT fix or facility on the PT inbound leg (5 NM for a 5-mile PT) [see figure 5-2-24].

Figure 5-2-24.



3. If the FAF altitude is greater than 1500 feet above the highest terrain in the final segment, the 1500-foot point is assumed to be inbound from the FAF at a distance determined by application of a 500 feet/NM descent gradient [see figure 5-2-25].

Example 5-2-14.

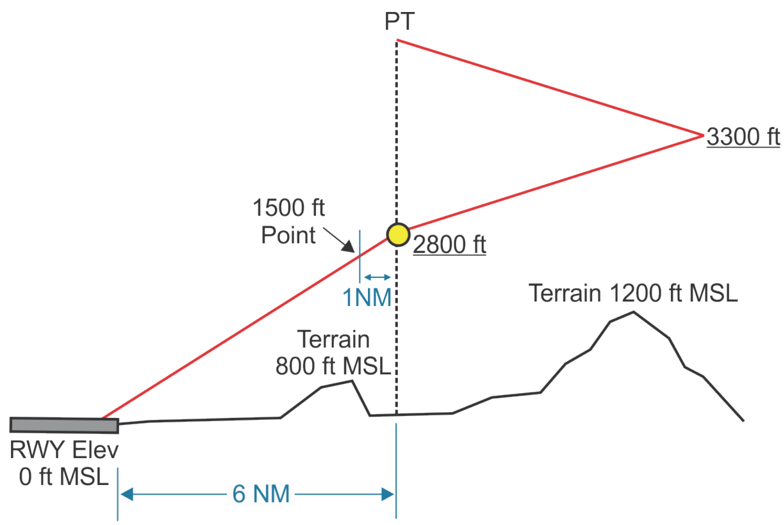
1500 feet AGL + 800 feet Terrain = 2300 feet MSL

2800 feet (FAF) - 2300 feet = 500 feet

500 feet / 500 feet/NM = 1 NM

6 NM (FAF) - 1 NM = 5 NM = 1500-foot Point

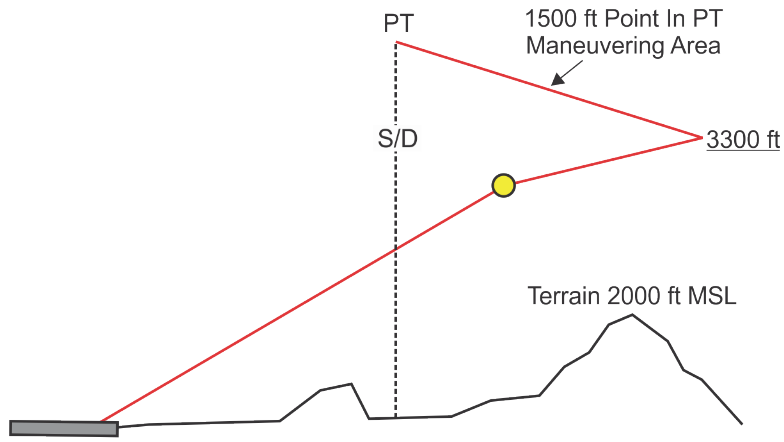
Figure 5-2-25.



(c) PT Over a Stepdown Fix AFTER the FAF.

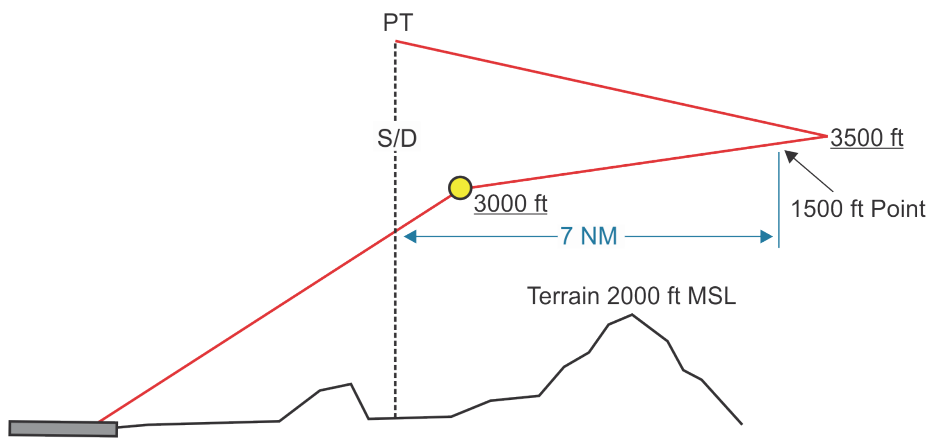
1. If the PT completion altitude is less than 1500 feet above the highest terrain in the segment underlying the course reversal, the 1500-foot point is in the PT maneuvering area [see paragraph 5-2-4k(7) and figure 5-2-26].

Figure 5-2-26.



2. If the PT completion altitude is 1500 feet or more above the highest terrain in the segment underlying the course reversal, the 1500-foot point is assumed to be 7 miles from the PT fix or facility on the PT inbound leg (5 NM for a 5-mile PT) [see figure 5-2-27].

Figure 5-2-27.

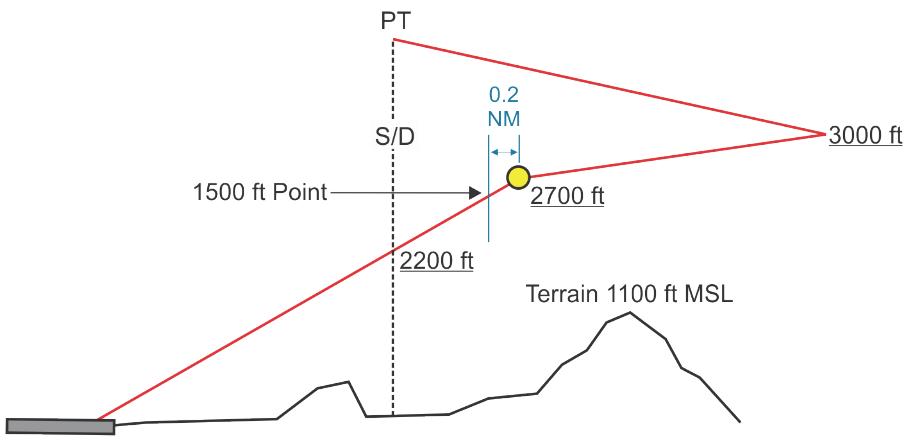


3. If the FAF altitude is 1500 feet or more above the highest terrain in the segment underlying the course reversal or the final segment, the 1500-foot point is assumed to be inbound from the FAF at a distance determined by application of a 500 feet/NM descent gradient [see figure 5-2-28].

Example 5-2-15.

1500 feet AGL + 1100 feet Terrain = 2600 feet MSL
2700 feet (FAF) - 2600 feet = 100 feet
100 feet / 500 feet/NM = 0.2 NM = 1000-foot Point

Figure 5-2-28.

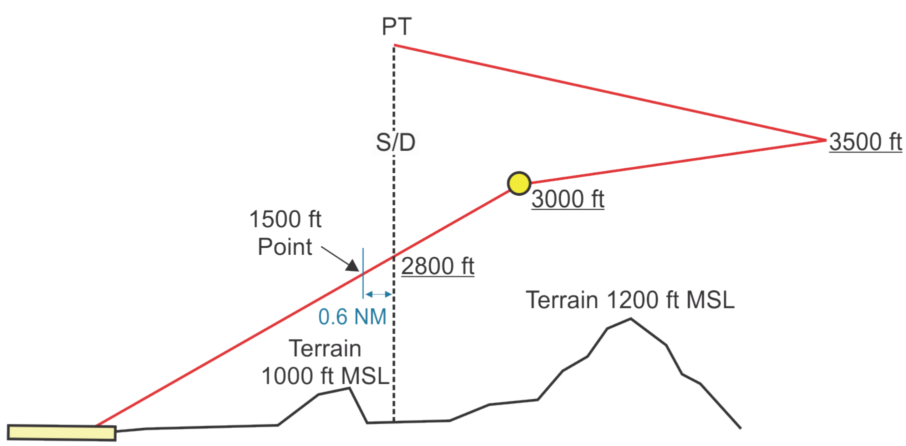


4. If the step-down fix/facility altitude is 1500 feet or more above the highest terrain in the final segment, the 1500-foot point is assumed to be inbound from the stepdown fix/facility at a distance determined by application of a 500 feet/NM descent gradient [see figure 5-2-29].

Example 5-2-16.

1000 feet AGL + 2000 feet Terrain = 3000 feet MSL
3100 feet (IF) - 3000 feet = 100 feet
100 feet / 500 feet/NM = 0.2 NM
5 NM (IF) - 0.2 = 4.8 NM = 1000-foot Point

Figure 5-2-29.

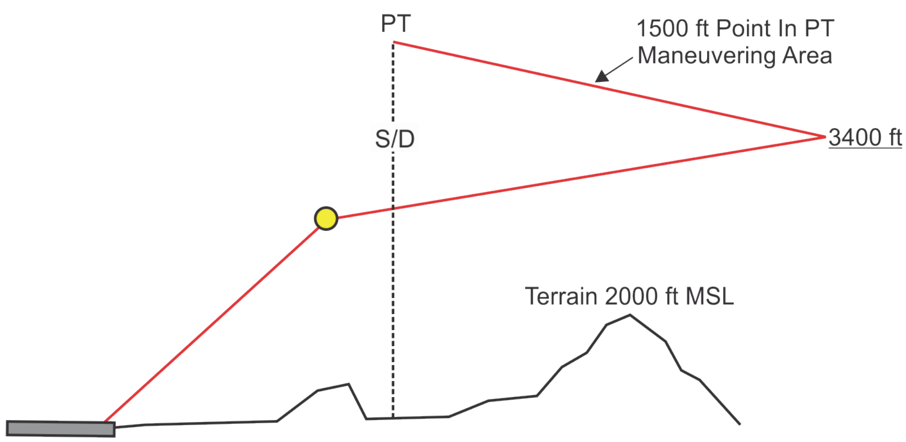


(d) PT Over a Stepdown Fix PRIOR to the FAF:

Condition: Distance between the stepdown fix/facility and the FAF less than 5 NM - see Order 8260.3, Volume 1, paragraph 244d.

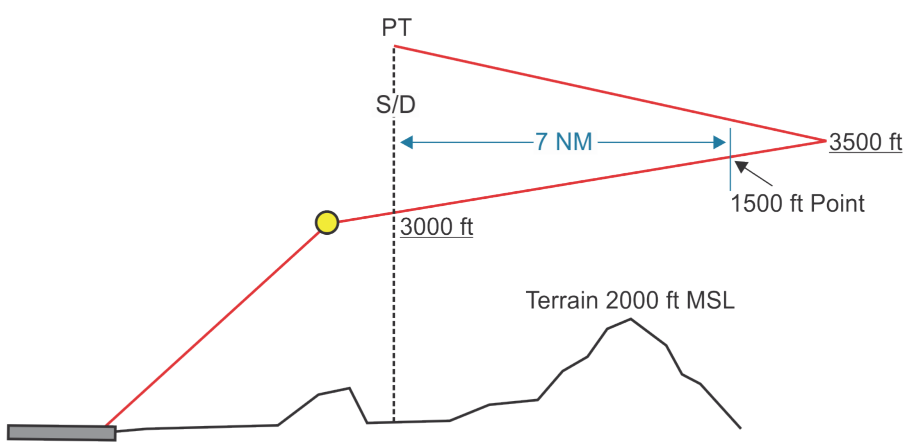
1. If the PT completion altitude is less than 1500 feet above the highest terrain in the segment underlying the course reversal, the 1500-foot point is in the PT maneuvering area [see paragraph 5-2-4k(7) and figure 5-2-30].

Figure 5-2-30.



2. If the PT completion altitude is equal to or greater than 1500 feet above the highest terrain in the segment underlying the course reversal, *but* the minimum altitude at the stepdown fix/facility is less than 1500 feet above the highest terrain in the segment underlying the course reversal, the 1500-foot point is assumed to be 7 miles from the stepdown fix/facility on the PT inbound leg [see figure 5-2-31].

Figure 5-2-31.

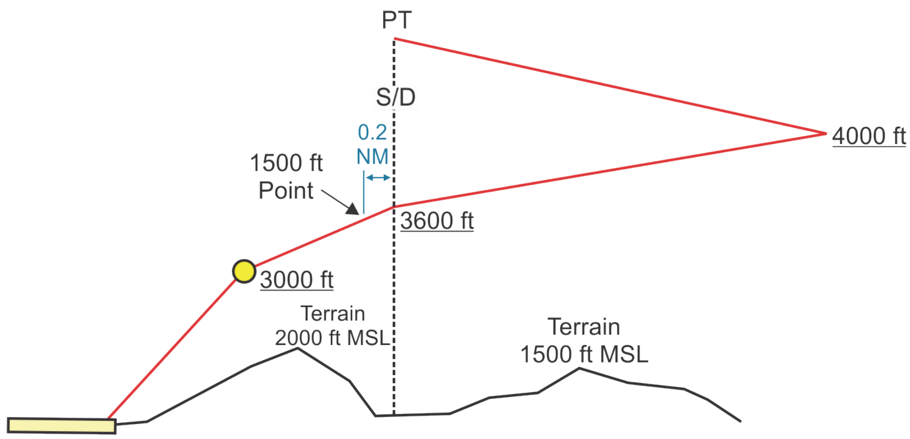


3. If the stepdown fix/facility altitude is 1500 feet or more above the highest terrain in the segment between the fix/facility and the FAF, the 1500-foot point is assumed to be inbound from the fix/facility at a distance determined by application of a 500 feet/NM descent gradient from the stepdown fix/facility [see figure 5-2-32].

Example 5-2-17.

1500 feet AGL + 2000 feet Terrain = 3500 feet MSL
3600 feet (Stepdown) - 3500 feet = 100 feet
100 feet / 500 feet/NM = 0.2 NM = 1500-foot Point

Figure 5-2-32.



4. If the 1500-foot point is inside the FAF**,** apply the methodology in paragraph 5-2-4c(2)(a) using a 500 feet/NM descent gradient.

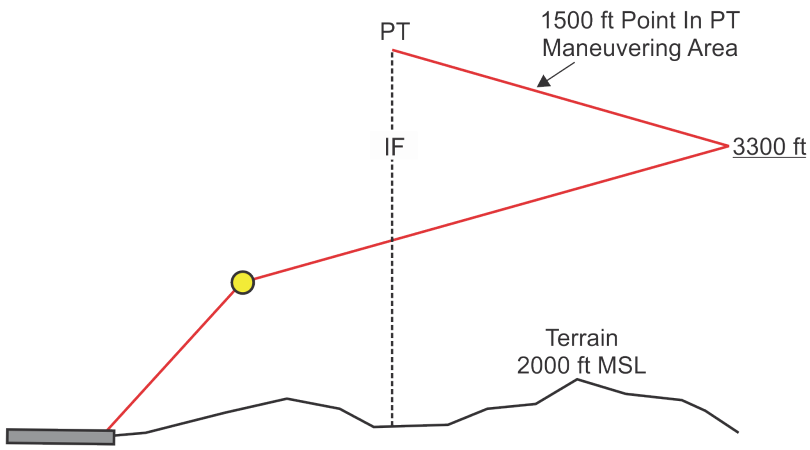
Condition: Distance between the stepdown fix/ facility and the FAF greater than 5 NM – see Order 8260.3, Volume 1, paragraph 244d. Since the fix/facility becomes the IF in this case, apply methodology for PT over the IF [see paragraph 5-2-4e(2)(e)].

Note: Where the distance between the stepdown fix/facility and the FAF equals 5 NM, either Order 8260.3, Volume 1, paragraph 244d or 244e may be applied; use the appropriate guidance in paragraph 5-2-4e(2)(d) or 5-2-4e(2)(e) accordingly**.**

(e) PT over the IF.

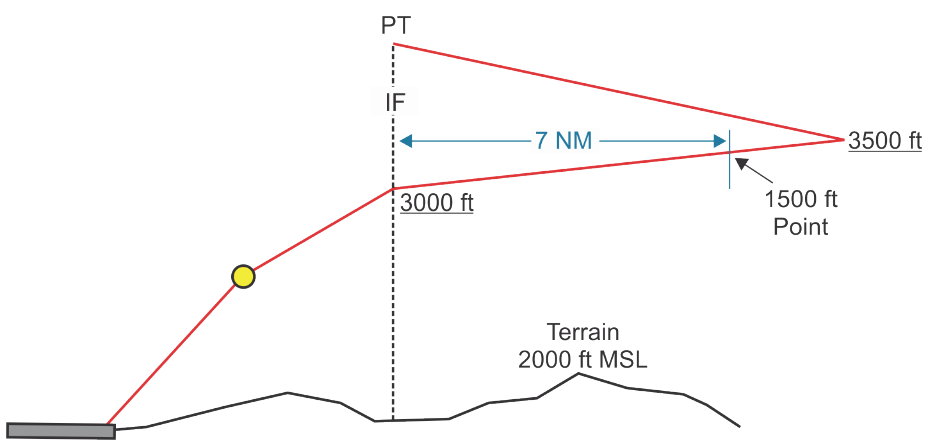
1. If the PT completion altitude is less than 1500 feet above the highest terrain in the segment underlying the course reversal, the 1500-foot point is in the PT maneuvering area [see paragraph 5-2-4k(7) and figure 5-2-33].

Figure 5-2-33.



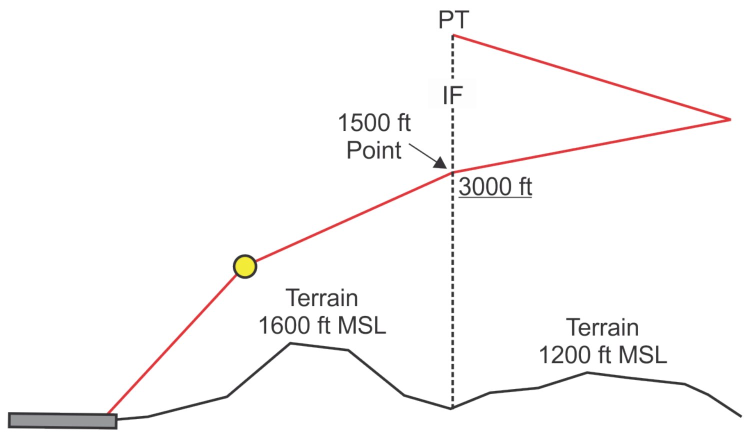
2. If the PT completion altitude is equal to or greater than 1500 feet above the highest terrain in the segment underlying the course reversal, the 1500-foot point is assumed to be seven miles from the IF on the PT inbound leg [see figure 5-2-34].

Figure 5-2-34.



3. If the minimum altitude at the IF is equal to or greater than 1500 feet above the highest terrain underlying the course reversal, *but* less than 1500 feet above the highest terrain in the intermediate segment, the 1500-foot point is at the IF [see figure 5-2-35].

Figure 5-2-35.



4. If the minimum altitude at the IF is greater than 1500 feet above the highest terrain in the intermediate segment, the 1500-foot point is assumed to be inbound from the IF at a distance determined by application of a 500 feet/NM descent gradient [see figure 5-2-36].

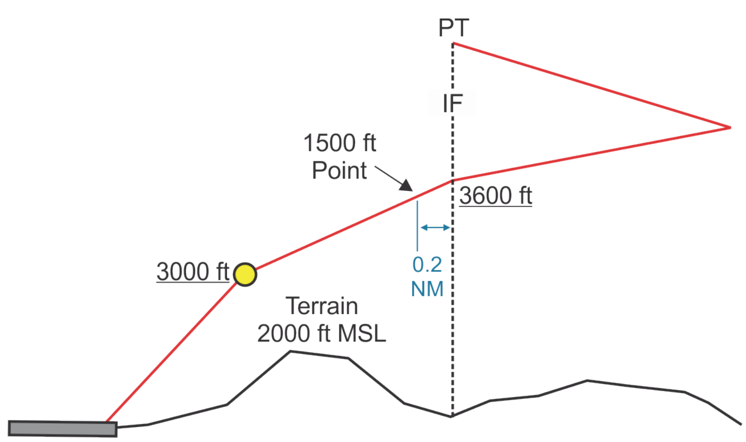
Example 5-2-18.

1500 feet AGL + 2000 feet Terrain = 3500 feet MSL

3600 feet (IF) - 3500 feet = 100 feet

100 feet / 500 feet/NM = 0.2 NM = 1500-foot Point

Figure 5-2-36.



5. If the 1500-foot point is inside the FAF, apply the methodology in paragraph 5-2-4(2)(b) using a 500 feet/NM descent gradient.

(3) Hold-in-Lieu of Procedure Turn (PT):

(a) At the FAF:

1. If the minimum altitude at the FAF is 1500 feet above the highest terrain in the final segment, the 1500-foot point is at the FAF. See figure 5-2-37.

2. If the minimum altitude at the FAF is greater than 1500 feet above the highest terrain in the final segment, apply the methodology in paragraph 5-2-4c(2)(a) using a 500 feet/NM descent gradient.

3. If the minimum hold-in-lieu-of PT altitude is equal to or greater than 1500 feet above the highest terrain in the segment underlying the course reversal, BUT the minimum altitude at the FAF is less than 1500 feet above the highest terrain in the segment underlying the course reversal, the 1500-foot point is assumed to be in the holding pattern area. The Class E 700-foot airspace (transition area) extension must encompass the entire holding pattern primary area. Use the pattern size appropriate to the highest holding speed at the published holding altitude [see paragraph 5-2-4k(11) and figures 5-2-37 and 5-2-38].

Figure 5-2-37.

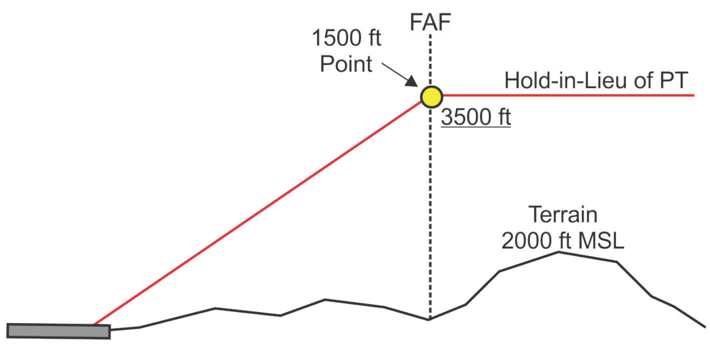
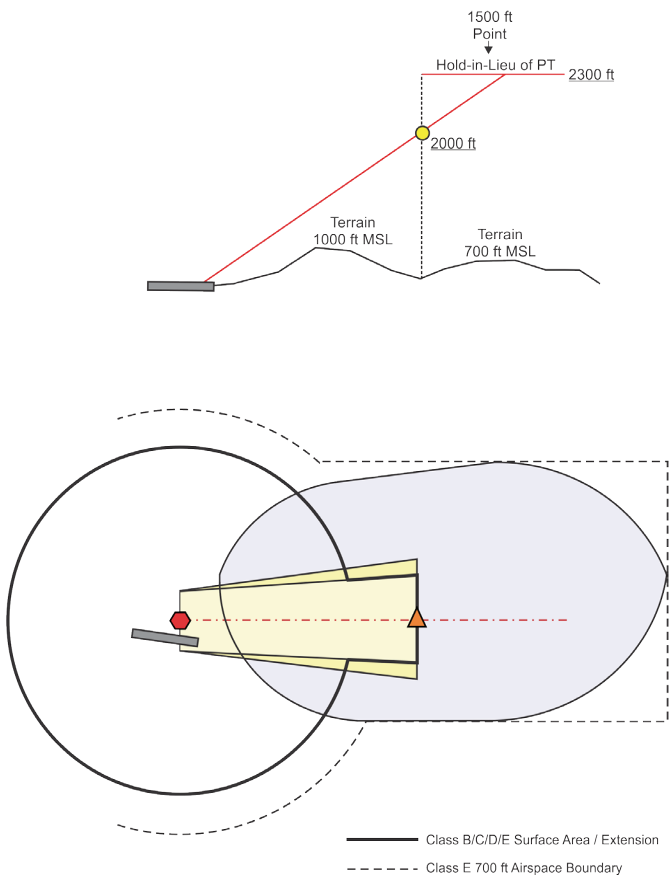


Figure 5-2-38.



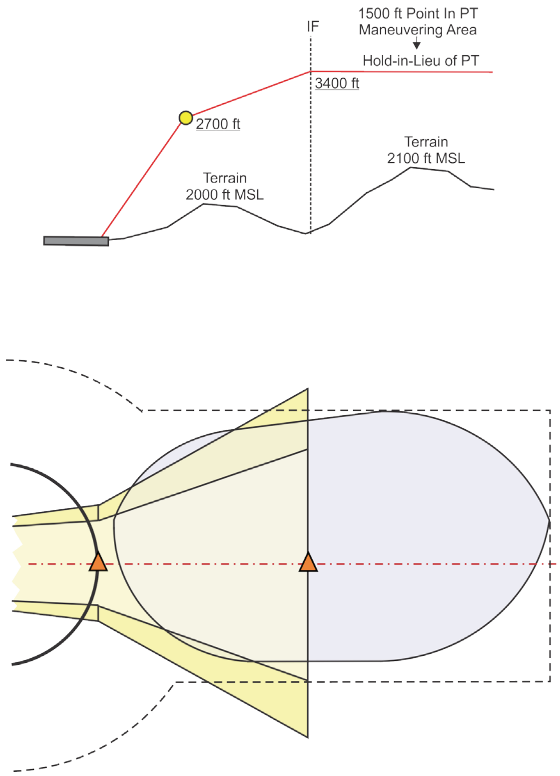
(b) At the IF.

1. If the minimum altitude at the IF equals 1500 feet above the highest terrain in the intermediate segment, the 1500-foot point is at the IF.

2. If the minimum altitude at the IF is less than 1500 feet above the highest terrain underlying the holding pattern, the 1500-foot point is in the holding pattern area. The Class E 700-foot airspace extension must encompass the entire holding pattern primary area. Use the pattern size appropriate to the highest holding speed at the published holding altitude [see paragraph 5-2-4k(7) and figure 5-39]. Provide the appropriate AT office a drawing clearly depicting the airspace required [see paragraph 5-2-4k(11)].

Note: In this case, controlled airspace requirements can be minimized by increasing the hold-in-lieu of PT minimum altitude to greater than or equal to 1500 feet above the highest terrain underlying the holding pattern area; apply paragraph 5-2-4e(3)(b) 1 or 2 as appropriate.

Figure 5-2-39.



3. If the minimum altitude at the IF is greater than 1500 feet above the highest terrain in the intermediate segment, the 1500-foot point is assumed to be inbound from the IF at a distance determined by application of a 500 feet/NM descent gradient from the IF [see figure 5-2-40].

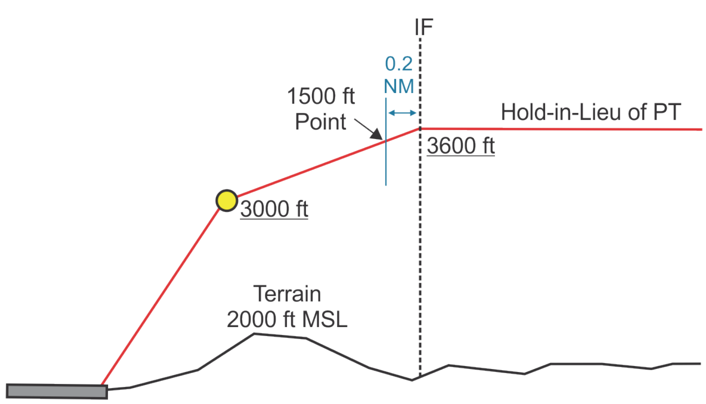
Example 5-2-19.

1500 feet AGL + 2000 feet Terrain = 3500 feet MSL

3600 feet (IF) - 3500 feet = 100 feet

100 feet / 500 feet/NM = 0.2 NM = 1500-foot Point

Figure 5-2-40.



f. Missed Approach. Normally, it can be expected that the airspace required to encompass the IAPs or DPs at an airport will be sufficient to encompass that airspace required for missed approach procedures. This particularly applies to any need for Class B/C/D/E Surface Area extensions. Determine required airspace as follows:

(1) Draw the IAP missed approach segment areas on a sectional chart (or any other chart depicting controlled airspace).

(2) Establish a 700-foot Class E airspace area whenever an IAP authorizes aircraft operation at/below 1500 feet AGL outside the basic Class B/C/D/E Surface Area. Where the clearance limit is reached prior to the 1500-foot point, ensure the entire missed approach primary area is contained within Class E 700-foot airspace, including clearance limit holding, if required [see figure 5-2-41].

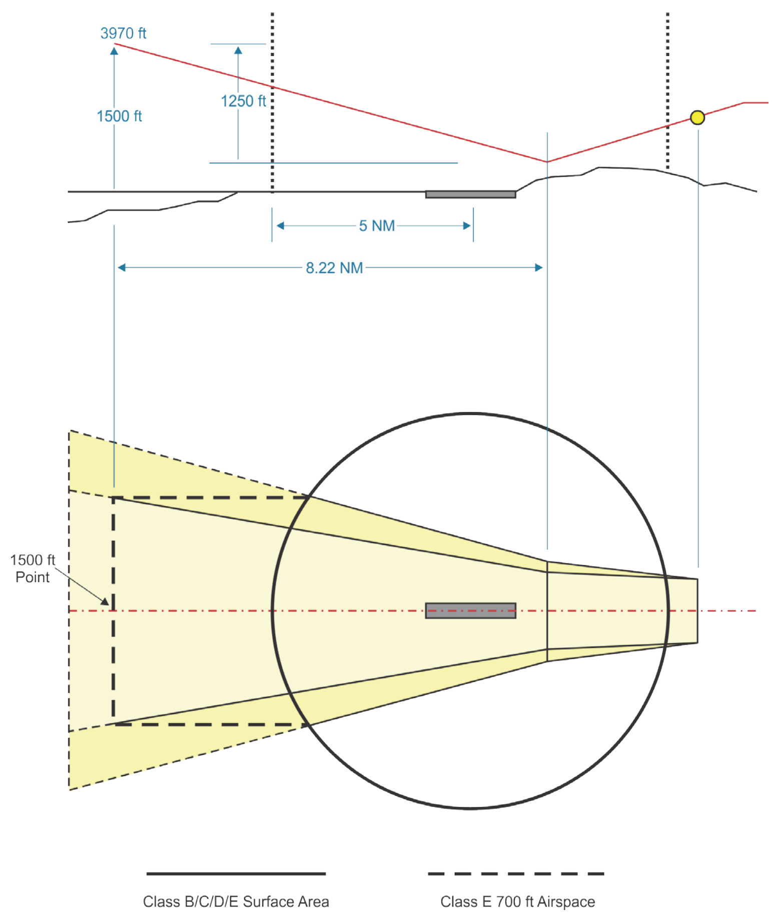
Example 5-2-20.

2470 feet MSL + 1500 feet Terrain = 3970 feet MSL

3970 feet MSL - 2720 feet (MDA) = 1250 feet

1250 feet / 152 feet/NM = 8.22 NM = 1500-foot Point

Figure 5-2-41.



g. HI-VOR or NDB (No FAF).

(1) 1000-foot Point:

(a) If the penetration turn completion altitude is equal to 1000 feet above the highest terrain in the area prior to the 10-mile point, the 1000-foot point is at the 10-mile point.

(b) If the penetration turn completion altitude is greater than 1000 feet above the highest terrain in the area prior to the 10-mile point, the 1000-foot point is assumed to be inbound from the turn completion point at a distance determined by application of a 500 feet/NM descent gradient.

(2) 1500-foot Point: Refer to Order 8260.3, Volume 1, table 2. The distance to the point of penetration turn completion and the "distance turn commences" from table 2 are assumed to be equal.

(a) If the penetration turn completion altitude is less than 1500 feet above the highest terrain underlying the penetration turn, the 1500-foot point is in the penetration turn area. Transition area boundaries must encompass the entire penetration turn area. Provide the appropriate ATC office a drawing clearly depicting the airspace required [see paragraph 5-2-4k(10)].

Note: In this case, controlled airspace requirements can be minimized by increasing the penetration completion turn altitude to greater than or equal to 1500 feet above the highest terrain underlying the penetration turn area; apply paragraph 5-2-4g(2)(b) or (c) as appropriate.

(b) If the penetration turn completion altitude is greater than or equal to 1500 feet above the highest terrain underlying the penetration turn, *and* less than 1500 feet above the highest terrain in the straight segment prior to the 10-mile point, the 1500-foot point is at the turn completion point.

(c) If the penetration turn completion altitude is greater than 1500 feet above the highest terrain underlying the penetration turn in the straight segment prior to the 10-mile point, the 1500-foot point is assumed to be inbound from the turn completion point at a distance determined by application of a 500 feet/NM descent gradient.

(d) If the penetration turn completion altitude is greater than 1500 feet above the highest terrain inside the 10-mile point, apply the methodology in paragraph 5-2-4c(2)(a) using a 500 feet/NM descent gradient from the 10-mile point.

h. HI-TACAN, VOR/DME, or VOR (with FAF).

(1) 1000-foot Point:

(a) If the penetration turn completion altitude is greater than 1000 feet above the highest terrain in the segment prior to the IF (or presumed IF location per Order 8260.3), the 1000-foot point is assumed to be inbound from the turn completion point at a distance determined by application of a 500 feet/NM descent gradient.

(b) If the penetration turn completion altitude equals 1000 feet above the highest terrain in the segment prior to the IF, the 1000-foot point is at the IF.

(c) If the IF altitude is greater than 1000 feet above the highest terrain in the intermediate segment, the 1000-foot point is assumed to be inbound from the IF at a distance determined by application of a 500 feet/NM descent gradient.

(d) If the FAF altitude is greater than 1000 feet above the highest terrain in the final segment, apply the methodology in paragraph 5-2-4c(2)(a).

(2) 1500-foot Point:

(a) If the penetration turn completion altitude is less than 1500 feet above the highest terrain between the turn completion point and the IF, the 1500-foot point is in the penetration turn area. Transition area boundaries must encompass the entire penetration turn area. Provide the appropriate ATC office a drawing clearly depicting the airspace required [see paragraph 5-2-4k(10)].

Note: In this case, controlled airspace can be minimized by increasing the penetration completion turn altitude to greater than or equal to the turn completion point and the IF; apply paragraph 5-2-4h(2)(b) or (c) as appropriate.

(b) If the penetration turn completion altitude equals 1500 feet above the highest terrain between the turn completion point and the IF, the 1500-foot point is at the turn completion point.

(c) If the penetration turn completion altitude is greater than 1500 feet above the highest terrain between the turn completion point and the IF, the 1500-foot point is assumed to be inbound from the turn completion point at a distance determined by application of a 500 feet/NM descent gradient.

(d) If the IF altitude is greater than 1500 feet above the highest terrain in the intermediate segment, the 1500-foot point is assumed to be inbound from the IF at a distance determined by application of a 500 feet/NM descent gradient.

(e) If the FAF altitude is greater than 1500 feet above the highest terrain in the final segment, apply the methodology in paragraph 5-2-4c(2)(a) using a 500 feet/NM descent gradient from the FAF.

i. Radar Vector to FAF (Radar Required).

(1) If the FAF altitude is greater than 1000 feet above the highest terrain in the final segment, apply the methodology in paragraph 5-2-4c(2)(a).

(2) If the FAF altitude is less than 1000 feet above the highest terrain in the final segment, the 1000-foot point is located PRIOR to the FAF [see paragraph 5-2-4k(4)].

(3) If the FAF altitude is greater than 1500 feet above the highest terrain in the final segment, apply the methodology in paragraph 5-2-4c(2)(a) using a 500 feet/NM descent gradient from the FAF.

(4) If the FAF altitude is less than 1500 feet above the highest terrain in the final segment, the 1500-foot point is located *prior* to the FAF [see paragraph 5-2-4k(7)].

j. Radar Vector to IF (Radar Required).

(1) If the IF altitude is greater than 1000 feet above the highest terrain in the intermediate segment, apply the methodology in paragraph 5-2-4c(2)(b).

(2) If the IF altitude is less than 1000 feet above the highest terrain in the intermediate segment, the 1000-foot point is located *prior* to the IF [see paragraph 5-2-4k(4)].

(3) If the IF altitude is less than 1500 feet above the highest terrain in the intermediate segment, the 1500-foot point is located *prior* to the IF [see paragraph 5-2-4k(7)].

(4) If the 1500-feet point is at/inside the IF, apply the methodology in paragraph 5-2-4e(1).

k. Information to be forwarded to ATC. Include the following information to be forwarded to ATC in a standard letter from AeroNav Products to the appropriate Air Traffic Service Area (or backside of Form 8260-9 if applicable). The airspace requirements stated in this chapter are detailed. An Airspace Section may be added to the report version of Form 8260-9 in order to separate the ATC Airspace Information from other remarks. See also paragraphs 5-2-3c and 8-7-1e.

(1) ARP coordinates; threshold coordinates (if straight-in authorized).

(2) FAF or IF Coordinates. List FAF and IF coordinates and any other pertinent fix coordinates (RF or TF fixes to include direction CW or CCW and center-point fixes if applicable) for segments with turns or multiple segments. List fix coordinates which aid in describing the final and intermediate areas, etc., which are not considered straight.

Example:

FAF: TEXET 323323.33N/1024354.23W

TEXET 323323.33N/1024354.23W 9.22 NM CW from TZRFT 323326.22N/1024352.33W

IF: POBOY 323422.12N/1024356.44W

(3) List distance from ARP (for circling only), list distance from runway threshold (for straight-in), or list distance from a named fix to the 1000-foot point for procedures with multiple turning segments. If RF turns are used in a segment where the 1000-foot point is located, provide a depiction of the segments prior to include the named fixes and coordinates of the fixes along the route, include the calculated distance from a fix to the 1000-foot point. If multiple

occurrences appear within a procedure, list the distance from a fix to the first 1000-foot point occurrence separately (first point a pilot encounters 1000 feet above terrain on the procedure). For example: If EDCBA IAF to the beginning of the IF segment has the 1000-foot point in the Initial Segment and ZYXWV IAF has the 1000-foot point in the Initial also, list both 1000-foot points. If the 1000-foot point is in the common Intermediate Segment or Final Segment, list only once.

(4) Width of the segment primary area at the widest point between the Class B/C/D/E Surface Area and the 1000-foot point; and the highest terrain elevation in the segment containing the 1000-foot point [see paragraph 5-2-4d(2) and figure 5-2-19]. For segments containing RF turns, document the width of the segment primary area, and describe the points (Lat/Long) where a line perpendicular to the centerline at the 1000-foot point corresponds with the width of the primary area. For segments with more than one RF turn, or complex turning areas, attach a simple depiction of the area showing the 1000-foot point and highlight/display the required airspace.

(5) True course (to the hundredth of a degree) of the segment in which the 1000-foot point is located. When RF turns are contained within a segment where the 1000-foot point is located, leave blank and add description of the segment (fix name and coordinates of the RF center point and radius as listed in paragraph 5-2-4k(2) examples).

(6) List Distance from ARP (for circling-only), list distance from runway threshold (for straight-in), or list distance from the named fix to the 1500-foot point for procedures with multiple turning segments. If applicable, state: “1500-foot point located in the PT maneuvering area;” or “1500-foot point located in holding pattern area;” or “1500-foot point located in (name of start fix) Intermediate Segment” or “1500-foot point is located in (name) Feeder Segment.” (The applicable Air Traffic Service Area will then establish the transition area in accordance with Order JO 7400.2). If the 1500-foot point is located in an Initial or Feeder Segment and additional airspace is needed, describe the fixes (Lat/Longs of start/end fixes as in paragraph 5-2-4k(2) examples). If RF turns are used in a segment where the 1500-foot point is located, provide a depiction of the segment(s) which define the start of the segment. Include the named fixes and coordinates of the fixes along the route; include the calculated Distance from the FAF, IF, IAF or Fix to the 1500-foot point. If multiple occurrences appear within a procedure, list the distance from a fix to the first 1500-foot point occurrence separately (first point a pilot encounters 1500 feet above terrain on the procedure). For example: If EDCBA IAF to the beginning of the IF segment has the 1500-foot point in the Initial Segment and ZYXWV IAF has the 1500-foot point in the Initial also, list both 1500-foot points. If the 1500-foot point is in the common Intermediate Segment or Final Segment, list only once.

(7) Width of the segment primary area at the widest point between the Class E 700-foot airspace (transition area) and the 1500-foot point; and the highest terrain elevation in the segment containing the 1500-foot point [see paragraph 5-2-4e]. For segments containing RF turns, document the width of the segment primary area, and describe the points (Lat/Long) where a line perpendicular to the centerline at the 1500-foot point corresponds with the width of the primary area. For segments with more than one RF turn, or complex turning areas, attach a graphic depiction of the area showing the 1500-foot point and highlight/display the required airspace.

(8) True course (to the hundredth of a degree) of the segment in which the 1500-foot point is located. When RF turns are contained within a segment where the 1500-foot point is located, leave off true course and add a description (fix name and coordinates of RF center point and radius, as listed in 5-2-4k(2) examples) of the segment.

(9) Highest terrain elevation in the each segment containing the 1000-foot and 1500-foot point(s), if necessary. If the highest documented terrain falls within the PT (including entry zone) or hold in lieu of PT, include the appropriate pattern size. Include holding pattern size.

(10) For high-altitude penetrations, paragraphs 5-2-4k(1) through (9), except paragraph 5-2-4k(2), apply. If applicable, state: "1500-foot point located in the penetration turn area," and leave (8) blank.

(11) For Terminal Arrival Area (TAA) application, AeroNav Products should, when necessary, provide the appropriate Air Traffic Service Area with information describing the TAA boundaries so that an appropriately sized radius from the ARP can be established to contain the TAA. If not known at that time, provide the information to the appropriate Air Traffic Service Area when it is available. The appropriate Air Traffic Service Area is allowed to establish whatever radius from the ARP is necessary to contain the TAA. Along with the standard information provided from paragraph 5-2-4k to the appropriate Air Traffic Service Area, provide the TAA boundary radii values and the radii center points in terms of fix names and coordinates with a description of the respective areas. Include a simple drawing to help the appropriate Air Traffic Service Area in visualizing the TAA airspace requirements.

l. SIAP Adjustment. Where the SIAP will not be derogated, consideration should be given to adjusting altitudes whereby the designation of unnecessary controlled airspace can be eliminated. The adjustment of altitudes should not be made where the descent gradients are increased above optimum.

m. Review. AeroNav Products must review airspace dockets to determine that the proposed airspace encompasses the appropriate portions of the IAP consistent with the data forwarded in accordance with paragraph 5-2-4k.

Section 5-3. Airport Airspace Analysis

5-3-1. General.

a. Public Law 103-272, Sections 40103b.1 and 44502, contain the basic authority for the FAA to conduct airport airspace analysis studies, which culminate in an FAA determination. In order for the FAA to fulfill its obligations pursuant to the Public Law, Part 157, Notice of Construction, Alteration, Activation and De-activation of Airports, was promulgated. This regulation requires proponents of the civil airport projects not involving federal funds to give the Administrator reasonable prior notice of such proposals so that he/she may be advised as to the effects the proposal will have upon the safe and efficient use of airspace by aircraft.

b. Other airport projects which are subject to airport airspace analysis studies include those eligible for airport improvement programs which are submitted to the FAA pursuant to Order 5100.38, Airport Improvement Program (AIP) Handbook; the Military Construction Program (MCP), submitted to the FAA for review pursuant to Public Law, and Department of Defense Directive 5030.17; the designation of instrument landing runways normally associated with airports under AIP agreements; changes in airport operating status from VFR to IFR; and changes to airport traffic patterns.

c. The provisions of Order JO 7400.2, Part 3, are applicable to all participating offices. Therefore, all Flight Standards and Service Area OSG-FPT personnel directly involved in airport airspace analysis must be familiar with Order JO 7400.2, and those general responsibilities specified in section 1-2, of this document.

5-3-2. Service Area OSG-FPT/Flight Standards Inputs in Establishment of Airports and Heliports. Since the term "airports" includes small isolated airports (including ultra-light flight parks), heliports, seaplane bases, and large airports, the problems associated with proposed establishment of airports are varied. However, it may be stated that Service Area OSG-FPT and AFS studies of all proposed airports or heliports relate mainly to the safety aspects involved, the feasibility of proposed anticipated operations, and the practicality of establishing reasonable instrument approach and VFR flight procedures, where required. Any proposed nonstandard installation or facility must be thoroughly reviewed to determine if an adequate level of safety can be achieved.

5-3-3. AFS performs the flight safety review of airport proposals to determine whether aircraft operations can be conducted safely considering the proposal's effect on the safety of persons and property on the ground. When requested by the Airports Division, AFS provides an operational safety review for Airports Division approval of a modification of an airport standard. AFS determinations, including studies referred by Service Area OSG-FPT, will be provided to the OPR.

5-3-4. Service Area OSG-FPT is responsible for evaluation and comment on all airport proposals related to IFR impact. Routine coordination with the AFS point of contact is expected on joint studies.

a. Questions to be considered in Service Area OSG-FPT/Flight Standards Analysis. It is not intended that the study be confined to these questions. It is recognized that some proposals will present unique problems that cannot be anticipated. Rather, the questions are outlined here to stimulate thinking (some of them are not applicable to all proposals):

(1) Where is the closest landing area? Is it depicted on aeronautical charts?

(2) What type of activity is contemplated for the proposed landing area? Will a conflict with established instrument approach procedures result? With other airports?

(3) Will existing obstructions result in unrealistic minimums? Unrealistic effective runway lengths? Will existing or proposed man-made and/or natural objects in the vicinity of the airport affect the safety of flight operations?

(4) What is the proximity of the closest city or town? Are runways aligned to avoid populated areas, schools, hospitals, and to minimize noise complaints? Other airports in close proximity?

(5) Are runways aligned in consonance with wind rose data? Is instrument runway aligned with IFR wind rose data?

b. Heliport Establishment. All proposals for the establishment of heliports must be given an on-site operational evaluation as specified in Order 8900.1, Volume 8, chapter 3, section 3. Proposed heliports to be located in congested areas, or any rooftop heliport, should be evaluated by helicopter qualified operations inspectors, or a qualified Procedure Evaluation Pilot (PEP).

c. Study Requirements. It must be recognized that some proposals will be acceptable from an airspace utilization point of view, but may be totally unacceptable from an operational safety standpoint. It is, therefore, important that a thorough study be performed and that Service Area OSG-FPT and AFS positions are developed and forwarded to the appropriate Airports divisions/ branches. A copy of this position should be forwarded to the other appropriate division or branch. This position should clearly state any operational limitations and restrictions that would be required, e.g., ingress/egress routes.

5-3-5. Alterations of Airports or Heliports. For the purpose of this order, “alteration” means realignment, activation, or deactivation of any runway layout, and/or associated taxiways, or any other substantial change to the surface of that part of an airport that is used or intended to be used for aircraft landing and taking off. Generally speaking, the contents of the previous paragraphs of this section are also applicable to proposed alterations. However, there is the additional consideration of effects on existing instrument approach procedures previously established for the airport. There is also the possibility of the need for relocation of associated navigation facilities.

5-3-6. Deactivation of Airports or Heliports. For the purpose of this order, “deactivation” means the discontinuance of use of an airport or landing area permanently, or for a temporary period of one year or more. The FAA requires notice of deactivation of airports. However, Service Area OSG-FPT and AFS have no authority to recommend approval or disapproval of such actions. It may be necessary in some cases to cancel approach procedures, or to recommend the relocation of previously associated airspace. Appropriate NOTAMs should, if required, be published and the closed airports should be marked in accordance with existing standards.

5-3-7. Assistance in Zoning Problems. It is FAA policy to advocate state and local legislation in the field of airport zoning in accordance with model acts prepared in cooperation with other National agencies, such as the Council of State Governments, the National Association of State Aviation Officials, and the National Institute of Municipal Law Offices. From time to time, Service Area OSG-FPT or AFS personnel may receive requests for assistance in the development of airport zoning acts (state) or ordinances (local). Such inquiries should be referred to airports personnel, and in the field to the appropriate airport engineer. Airports personnel are well versed with the model legislation that has been developed, and have been instructed in the dissemination of the material contained therein.

Section 5-4. Restricted Areas

5-4-1. General.

a. A restricted area is airspace designated under 14 CFR Part 73 within which the flight of aircraft, while not wholly prohibited, is subject to restriction. No person may operate an aircraft within a restricted area between the designated altitudes and during the time of designation without the permission of the using or controlling agency.

b. Obstacle Clearance. Areas which contain restricted entry (e.g., Restricted areas, Prohibited Areas, etc.) are not considered obstacles to the establishment of instrument flight procedures. However, obstacle clearance must be provided over terrain and/or manmade obstacles within the restricted area that underlies the flight procedure clearance area. The lateral and vertical boundary of the restricted area must be used to define the obstacle location when tethered balloons are within; do not evaluate the obstacle itself.

5-4-2. Letter of Procedures. A letter of procedure between the using agency of a joint-use restricted area and the ATC facility (controlling agency) may be promulgated to allow non-participating aircraft to transit the restricted area when the area is not being used for its designated purpose.

Section 5-5. Establishment, Relocation, or Discontinuance of Radio Navigation Aids

5-5-1. Criteria and Guidelines. The criteria and guidelines for the establishment, relocation, or discontinuance of navigational aids affecting airspace are contained in Order 7031.2, Airway Planning Standard Number One Terminal Air Navigation Facilities and ATC Services.

5-5-2. OSG-FPT Action. Conduct studies to determine the effect of the proposed action on existing or proposed IFR flight operations.

5-5-3. AFS Action. Conduct studies to determine the effect of the proposed action on operational safety as relates to existing or proposed visual flight operations. AFS will provide input to the appropriate Air Traffic Service Area OSG-FPT relating to operational impact, and to other interested divisions on request.

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Chapter 6. Military Procedures

6-1-1. General. Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), specifies that the United States Army, Navy, Air Force, and Coast Guard are responsible for the establishment and approval of instrument procedures as well as the review and approval of radar minimum vectoring altitude (MVA) charts for airports under their respective jurisdiction. This responsibility also applies to the approval of deviations from standards. Order 8260.3 also states that the FAA will accept responsibility for the development and/or publication of military procedures when requested to do so by the appropriate military service through an interagency agreement.

a. United States Army Procedures. Under National Agreement 127 (NAT-127), the FAA provides worldwide terminal instrument procedures service for the United States Army. Army procedural requirements must be processed in accordance with Order 8260.15, U.S. Army Terminal Instrument Procedures Service.

b. United States Air Force (USAF) Procedures. USAF procedural requirements must be processed in accordance with Order 8260.32, U.S. Air Force Terminal Instrument Procedures Service.

c. United States Navy (USN) Procedures. There is no formal agreement for FAA support of USN procedure development. Questions concerning United States Navy procedures must be directed to: Deputy Head, Naval Flight Information Group (NAVFIG); Code 525E0; SPAWARSYSCEN Atlantic; P.O. Box 190022; North Charleston, SC 29419-9022.

6-1-2. Review and Coordination.

a. Military Procedures. Military instrument procedures are reviewed and coordinated in accordance with applicable military directives prior to submission for flight inspection. Review of the procedure to determine compliance with Order 8260.3 criteria or other approved 8260-series orders (except as noted in paragraph 6-1-1) is *not* an FAA responsibility. Flight Inspection Services must forward flight inspection comments regarding procedure design, flyability, etc., to the attention of the authority submitting the procedure(s).

b. Military Fixes. Military fixes are maintained in the National Airspace System Resources (NASR) Database, which is accessed by FAA air traffic system computers for radar display, and used to develop aeronautical charts and avionics databases. Therefore, it is imperative that the requirement to document and name fixes supporting military operations/procedures receive the same priority as Forms 8260-2 that support civil procedures. See paragraph 8-5-1a for processing requirements.

6-1-3. FAA Acceptance. FAA accepts military procedures for civil use unless the note "Not for Civil Use" is annotated on the procedure by the military. The "not for civil use" annotation should only be used when a military procedure deviates from standards and an equivalent level of safety is not achieved.

6-1-4. Assistance. Military commands may contact AFS-420 for technical assistance regarding instrument procedure design, criteria, use of FAA forms, and in determining an equivalent level of safety related to a waiver. AeroNav Services will provide assistance in completing and processing forms, waivers, and procedures submitted for flight inspection, commensurate with present workload.

Chapter 7. Planning

Section 7-1. General

7-1-1. General.

a. The development of effective and efficient flight procedures is closely related to the facility establishment and airport programs, and requires active participation by Flight Standards, the applicable Air Traffic Organization Service Area, and Office of Airports personnel in the planning, programming, and budgeting of navigation facilities and airport development plans. Instrument procedures often determine the alignment and location of navigation facilities as well as the location, marking, and lighting of airport landing and maneuvering areas.

b. The allocation of funds frequently depends on the determination that efficient procedures can be developed and can be justified based on operational benefits (landing minimums) or safety improvements. Therefore, the operational planning associated with facility installations and airport development, particularly in large terminal areas, is one of the most important responsibilities of the Flight Standards, Flight Procedures, and Airspace Programs.

c. General Design Requirements. Instrument approach procedures must provide a smooth transition from the en route structure, and provide the pilot with sufficient information to effect a safe instrument approach to a landing or missed approach. In the interest of safety, these charts must be easy to interpret. The speed of modern aircraft demands that greater simplicity, minimum cockpit workload, and ease of interpretation be incorporated in the design of the instrument procedure. Criteria used in the design of standard instrument procedures are contained in Order 8260.3, United States Standard Terminal Instrument Procedures (TERPS), and other specific 8260-series orders.

Note: Attempts to apply all possible options permitted by criteria to obtain lowest possible minimums should not be made if the resultant procedure is overly complex and only a minor operational benefit is gained.

d. Give full consideration to the environmental impact of procedures on local communities. Consider locations containing plume emitting devices (i.e., smoke stacks, cooling towers, and other systems emitting a vertical exhaust) and their effect on aircraft operations over these locations. Avoid schools, churches, hospitals, stadiums, rest homes, populous residential areas, and other noise-sensitive areas whenever possible due to the potential for adverse environmental impact. Where the location of facilities and/or the flow of air traffic will permit, use the highest possible altitudes consistent with optimum descent angles/rates in all segments of approach procedures to provide the least noise interference.

Section 7-2. Planning Standards

7-2-1. Planning Standards.

a. Facility Establishment. Airway Planning Standards contain the criteria for the establishment of air navigation facilities. These criteria are based, in part, on air traffic demand since the volume of traffic provides a measurable indication of the need for air navigation facilities and other aeronautical services.

b. Standards Limitations. Airway Planning Standards do not; however, cover all situations which may arise and are not to be used as a sole determination in denying a service where there is a demonstrated operational or Air Traffic Control (ATC) requirement. An aeronautical requirement may exist for facilities that cannot be adequately measured by a consideration of air traffic demand alone. Similarly, air traffic demand does not in itself always constitute a requirement for an air navigation facility. These situations must be individually evaluated to determine whether the benefits to be gained are commensurate with the cost of the facility or service.

c. Benefit/cost ratios have been established by the Office of Aviation Policy and Plans (APO-1). Phase I deals with determining the traffic activity using Airway Planning Standard Number One (APS-1). Phase II criteria are a comparison of the present value quantitative benefits of installing an air navigation facility, with the present value of the costs for establishing the aid. Phase II includes other factors such as weather, etc. In most instances, the establishment criteria, in addition to the traffic volume, require an operational improvement in the form of lower altitudes or reduced visibilities with respect to IFR operations or a safety benefit with respect to visual aids that are required to resolve known safety problems.

d. Responsibility. The primary responsibility for determining that a location meets the air traffic volume requirements rests with Vice President of System Operations (AJR-0). The responsibility for identifying improvements to operational minimums or for establishing safety requirements is jointly shared by the Air Traffic Safety Organization (AJI), AeroNav Products, and Flight Standards Service (AFS-1). Specific areas of responsibility are delineated in chapter 1. However, each organization has unique skills and expertise that must, in many situations, be combined in a teamwork approach in the area of airport and navigational facility planning. AeroNav Products personnel serve in a team leadership role in developing and recommending improvements to instrument flight rules (IFR) procedures, operational minimums, and associated facilities.

7-2-2. Determination of Operational Benefits/Improvements.

a. General. An operational benefit and/or improvement are considered to exist:

(1) When IFR operations can be authorized where none existed previously;

(2) Where a reduction of IFR minimums on existing procedures can be achieved;

(3) Where an additional navigational aid (NAVAID) will provide lower minimums than those authorized on existing adjacent facilities; or

(4) Where a reduction in minimums cannot be achieved, an improvement in operational safety can be demonstrated.

b. Criteria. A reduction of at least 100 feet in descent altitude or a reduction of ¼ mile in visibility requirements should be indicated to adequately support an operational benefit. Where a reduction of less than 100 feet in descent altitude is anticipated, additional justification should be provided to show that other improvements in the overall operation could be achieved with the additional facilities. Such improvements might include simplification of operating procedures; reduction of flight time; improved course guidance; improved runway alignment; or elimination of criteria waiver, etc. Flight Standards and AeroNav Products personnel are expected to provide this type of supporting information during the planning phases for new NAVAIDs.

c. Determination. A final determination that the anticipated benefits can actually be achieved is necessarily dependent upon the demonstrated performance of the facility at the time of commissioning; however, a reasonable evaluation can be made for planning purposes based on the best information available at the time.

Section 7-3. Safety Analysis

7-3-1. Performing a Safety Analysis.

a. The Airway Planning Standards consider the programming of precision approach path indicator (PAPI) and runway end identifier lights (REIL) as visual aids provided the runway meets a minimum number of landings and a reasonable safety benefit versus cost can be established. Although not specifically considered in the planning standards for visual flight rules (VFR) use, an economy approach light system may be considered to resolve a safety problem where the cost of the system is commensurate with the improvement desired, and the REIL or PAPI will not provide the necessary service.

b. In those cases where visual aids are considered essential to operational safety but the runway does not meet the traffic volume requirement, additional justification should be developed highlighting the visual deficiencies, as they exist and the improvements that will be achieved. AeroNav Products personnel will recommend to, or assist, the Airports Division and Air Traffic Technical Operations Service Areas in developing the principal justification for programming visual aids at IFR airports.

c. Flight Standards regional and field personnel will provide input to the regional planning teams through the Regional NextGen Branch (RNGB) for visual aids to correct deficiencies identified during their flight program activity, contact with the public, or during incident/accident investigations. Flight Standards will provide primary support for the planning of visual aids for safety improvements at VFR public use airports. The RNGB will review all division inputs for appropriateness and develop recommendations for the regional airports and facilities planning groups.

d. Determining Visual Aids Safety Benefits. Orders 7031.2, Airway Planning Standard Number One Terminal Air Navigation Facilities and ATC Services, and Order JO 7400.2, Procedures for Handling Airspace Matters, provide FAA personnel with the basic guidance for establishment and justification [see paragraph 7-8-1c].

(1) There are a number of operational and environmental situations where visual reference deficiencies exist, and where improvements can be made by the installation of a visual aid system to enhance safety. Typical deficiencies include:

(a) Deceptive Approach Area. A situation in which the topography, landmarks, or lights underlying the approach path do not provide the pilot with an adequate visual reference plane on which to establish a proper approach to a runway. This includes open water, featureless terrain, dense tree growth, deceptive lights, or rapidly rising or falling terrain that presents an unbroken or indefinite surface lacking the contrast for depth perception and glide angle maintenance.

(b) Obstruction Clearance. A situation in which natural or man-made obstructions under, or penetrating, the approach surface makes pilot judgment of obstruction clearance difficult due to their orientation, irregular pattern, or obscurity due to inability to provide appropriate marking or lighting.

(c) Runway Identification. A situation in which environment surrounding an airport derogates the pilot's ability to instantaneously establish and maintain runway identification at two miles or less from the runway threshold within 90 degrees of the runway centerline extended. One of the following conditions may hamper identification:

1. Overriding Lights. A general preponderance of metropolitan or area lighting located within two miles of the circling approach area to the runway.

2. False Lights. A configuration of non-aviation lighting, underlying the approach surface, which presents to the pilot false runway identification such as a well-lighted boulevard, expressway, or railroad yard that crosses the approach area at 45 degrees or less to the runway centerline extended.

(d) Runway Alignment. A situation in which the runway lighting fails to provide alignment information sufficiently in advance to assure correct intercept of the extended runway centerline and subsequent approach. This situation may be divided into two types:

1. Intercept Guidance. Where straight-in visual approach to the runway is at an angle of 15 degrees or more to the runway centerline extended and the line of sight to the runway lights is obstructed.

2. Circling Guidance. Where, due to terrain or technical considerations, the primary approach is aligned mainly downwind and the subsequent circling to the upwind requires positive alignment reference to preclude overrunning the runway centerline extended.

(e) Nonprecision Straight-in Approach. A runway to which a nonprecision straight-in approach has been authorized. Vertical guidance is necessary for stabilized descent from the minimum descent altitude (MDA) to the runway. The vertical guidance assists the pilot in maintaining a safe flight path to the runway, thus avoiding premature descent, which may result in landing short of the runway during weather visibility conditions at or near the authorized straight-in minimums.

e. Flight Standards and AeroNav Products personnel will frequently be involved in airport planning studies in their respective areas of responsibility, which require analysis of the merit of adding various visual aids (see table 7-3-1). In addition to the specialist's experience or input from other knowledgeable persons, the following should be considered in recommending a particular visual aid:

Table 7-3-1. Visual Aids Usage

Operational Problem	PAPI/VASI	REIL	MALS	LDIN
Deceptive Approach Area	Very Effective	Ineffective	Effective	Very Effective
Obstruction Clearance	Very Effective	Ineffective	Ineffective	Limited Effectiveness
Runway Identification	Limited Effectiveness	Effective	Effective	Very Effective
Runway Alignment	Ineffective	Limited Effectiveness	Very Effective	Very Effective
Vertical Guidance	Very Effective	Ineffective	Ineffective	Ineffective
Turbojet Operations	Very Effective	Ineffective	Limited Effectiveness	Effective
Circling Guidance	Ineffective	Limited Effectiveness	Limited Effectiveness	Very Effective

Note: Omni-directional REIL may be considered for improving guidance to a circling runway if the unbaffled lights would not create a greater problem for operations on other runways.

Section 7-4. Airway Planning

7-4-1. General.

a. The primary responsibility for the establishment, amendment, or deletion of airways, area navigation (RNAV) routes, and jet routes rests with the ATO Mission Support Services (AJV-0) based on air traffic demand and user requirements. AeroNav Products and applicable Service Area Flight Procedures Teams must participate in airway planning with respect to navigational signal coverage over designated routes, development of minimum en route altitudes (MEAs) and related data, and the siting of electronic facilities. Frequently, terrain factors or site availability dictate the siting of an electronic facility; however, there are instances where the en route facility can be located so as to provide a terminal instrument approach capability in addition to the en route service.

b. AeroNav Products should be cognizant of operational requirements and environmental conditions in the en route and terminal areas that need to be considered in order to develop sound recommendations for optimum facility siting. Situations will arise where AeroNav Products considers that a change in airway planning is necessary or desirable. Such changes could result from facility restrictions, lack of facility coverage, need for lower MEAs, improvement in airway alignment, and elimination of criteria waivers, etc. Every effort should be made to develop recommendations in coordination with the appropriate Air Traffic Technical Operations Service Area and ATC so that full consideration of local problems will be reflected in Service Area planning.

Section 7-5. Terminal Planning

7-5-1. General.

a. Responsibility. The primary responsibility for identifying airport locations that qualify for new terminal navigational facilities (except radar) rests with the regional airports division. Proposed actions must be coordinated with AeroNav Products and all other associated lines of business. AeroNav Products is required to participate in terminal planning with respect to the type of facilities required for the intended operations, development of instrument procedures, operational minimums, and the establishment of priorities for procurement and installation of planned facilities. The applicable Service Area Flight Procedures Team personnel should be cognizant of operational requirements and environmental conditions in the terminal areas that need to be considered in order to develop sound recommendations for facility selection and optimum facility siting. The RNGB will provide technical assistance to applicable planning teams developing low weather (Category II/III) facilities, applying emerging technologies, or requiring expertise in determining if a waiver to a flight procedure is practical.

b. Planning Recommendations. The applicable Service Area Flight Procedures Team personnel should identify potential improvements to IFR terminal operations to appropriate Air Traffic Service Areas and Airports Division planners. Such recommended improvements could occur as a result of new facility restrictions, changes in airport operations, and the need for improved instrument procedures, safety considerations, and elimination of criteria waivers.

c. Waiver Action. If waiver action is required to support new construction in the planning/pre-construction phase, a pre-approval waiver package must be submitted in accordance with section 8-4. A cover letter must accompany the Form 8260-1 that includes an explanation for the need to request early waiver action. If the proposed deviation has been found acceptable, a temporary waiver approval will be issued. A permanent waiver request must be submitted 180 days prior to the beginning of the operation that the waiver supports.

7-5-2. Requirements for Outer Compass Locators for New ILS Installations. In achieving the goals of reducing the total establishment costs for instrument landing systems, emphasis has been placed on providing only those components and services that are essential to the basic operational need. In this respect, the compass locator has not been considered a required item for many new ILS locations and will be included as a component only where it is properly justified. These criteria specify conditions that must be considered to properly justify the installation of compass locators in conjunction with new ILS facilities. The term “transition” is used for convenience throughout this section in lieu of feeder route and initial approach segment associated with instrument approach procedure construction.

a. General Criteria.

(1) Compass locators are not required at locations where satisfactory transitions can be established to the LOC course from supporting NAVAIDs unless holding at the compass locator is required.

(2) Compass locators are not required in airport surveillance radar (ASR) environment where radar service can be provided on a continuous basis. Where radar service is used for

transitioning to the instrument landing system (ILS), vectors to a point within the normal ILS clearance area are required to eliminate the procedure turn (NoPT). This does not impose a radar-fixing requirement as a condition for executing the approach procedure.

(3) An outer marker (OM) by itself must not be used to identify the point from which holding or a procedure turn is to be executed [see paragraph 2-4-6].

(4) A procedure turn may be authorized from an intersection that overlies the OM or is established outside of the OM location. For planning purposes, the accuracy of the intersection should not exceed plus or minus one mile.

(5) Transitions must not be established from outside of the normal clearance and buffer areas unless they have been flight checked and the minimum localizer clearance requirements are met. Where such a flight check is unsuccessful, an intersection must be established on the localizer course, or a lead-radial established within localizer coverage. When established on the localizer course, the transition route from a very high frequency omni-directional range (VOR) or non-directional radio beacon (NDB) must be predicated on a NAVAID or fix which does not utilize the localizer; i.e., the fix must stand alone on a localizer course for definition [see paragraph 8-5-2f(3) and figure 7-5-4]. Order 8260.3, Volume 1, paragraphs 287a and 1761 apply.

(6) Transitions to the localizer (LOC) course, which permit a straight-in approach (NoPT), will be established in accordance with criteria for localizer intercept angles and length of intermediate segment described in Order 8260.3, Volume 3, paragraph 2.3.1, and depicted in figure 7-5-3. Although criteria permit localizer intercept of 15 degrees at one mile from the OM, it is recommended that all intercepts be established no less than three miles nor more than 10 miles from the OM. In no case, will a straight-in approach be authorized from a transition that proceeds from a facility/fix directly to an OM or compass locator at outer marker (LOM) unless the facility/fix is established on the localizer course.

b. Satisfactory Transitions. The standard for localizer usable distance/coverage is 18 miles within ± 10 degrees of the localizer course, and 10 miles for that area between 10 degrees and 35 degrees either side of the course. In determining the need for a compass locator, facility performance data may not be available for the development of transitions. Figures 7-5-1, 7-5-2, 7-5-3, and 7-5-4 depict normal clearance areas with a two-mile buffer area established around the perimeter. These figures will be used for determining the need for a compass locator during initial facility planning and for the development of original procedures when flight check data is not available. The following general guidelines will apply:

(1) When a VOR or NDB fix exists, within the shaded area shown in figure 7-5-1, transitions may be established to a fix on the localizer course from which a procedure turn can be executed.

(2) When a VOR or NDB is located, within the shaded area shown in figure 7-5-2, and a fix can be established at the OM location in accordance with paragraph 7-5-2a(4), a transition may be established to the fix from which a procedure turn can be executed.

(3) When a VOR, NDB, or satisfactory fix exists or can be established within the shaded area shown in figure 7-5-3, a transition may be established to the localizer course and a procedure turn is not required.

Figure 7-5-1. Transition to Localizer Fix for PT

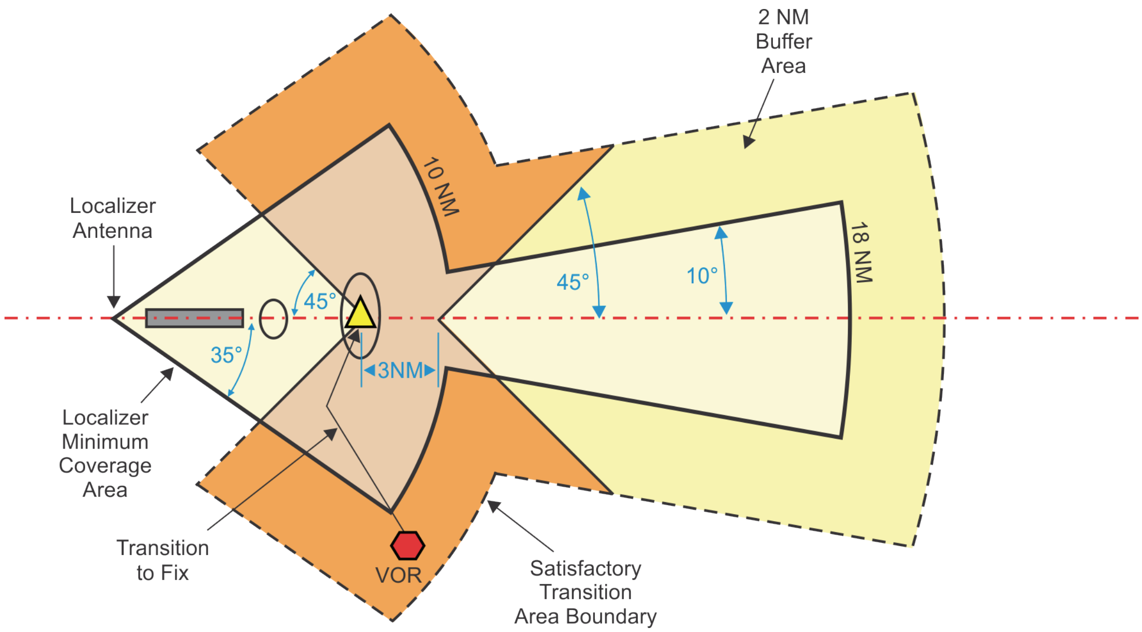


Figure 7-5-2. Transition to OM for PT

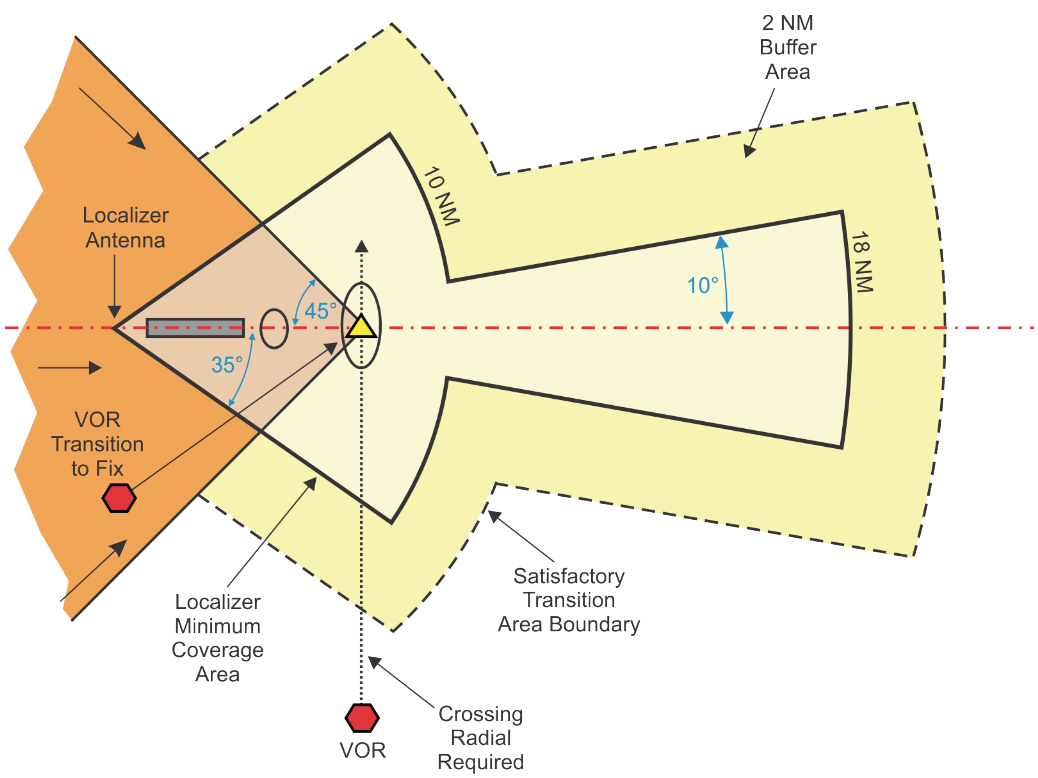


Figure 7-5-3. Transition to LOC Course (NoPT)

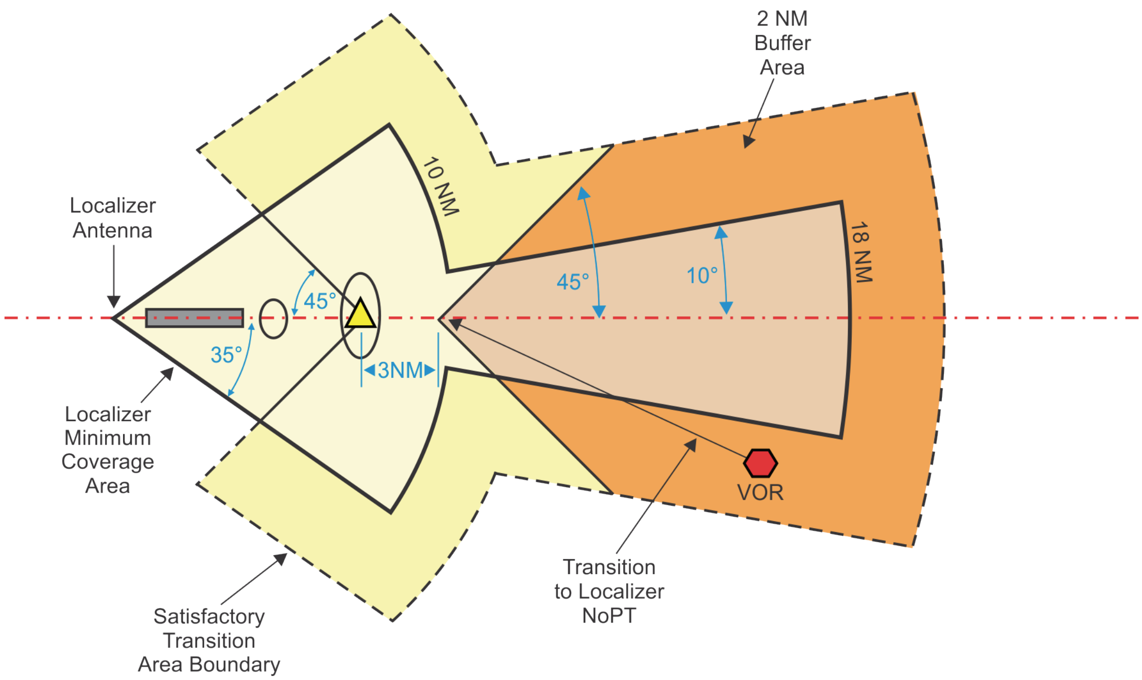
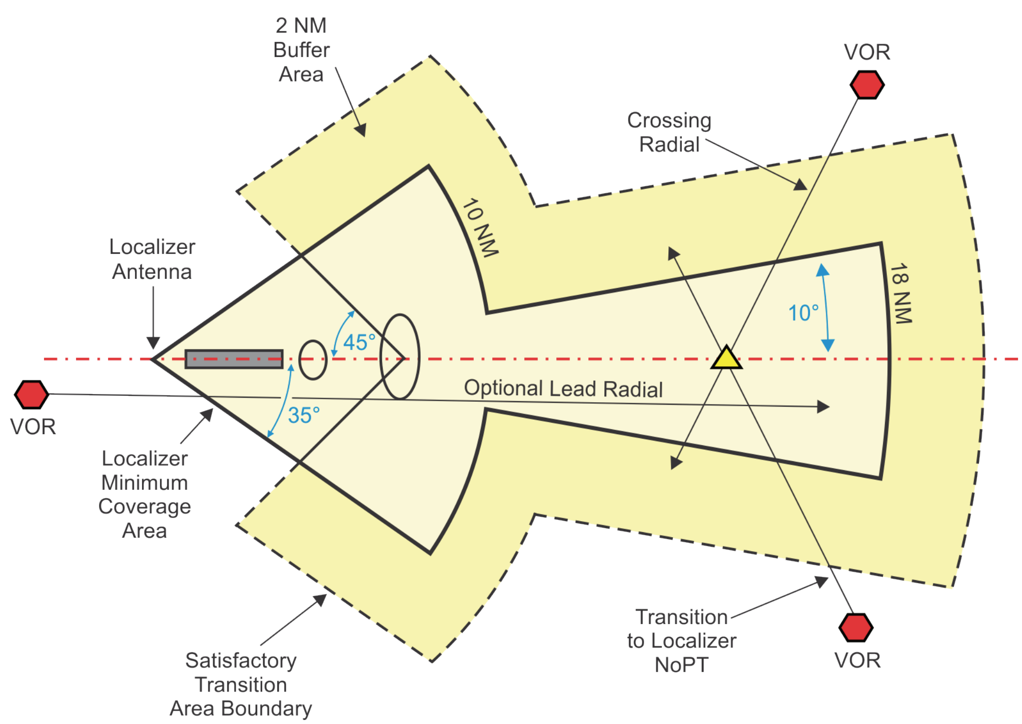


Figure 7-5-4. Stand-Alone Fix on LOC Course



(4) Criteria for fix accuracy are contained in Order 8260.3, Volume 1, paragraph 287a. Minimum divergence angle for PT fix is 45 degrees.

c. Locations that Qualify for a Compass Locator. In determining the need for a compass locator, the local traffic flow, location of supporting facilities, and local terrain features must be considered. A compass locator may be planned for new ILS installations where one or more of the following conditions exist:

(1) In a non-radar environment where a transition cannot be established in accordance with paragraph 7-5-2b.

(2) In a non-radar environment where satisfactory transitions can be established in accordance with paragraph 7-5-2b, but the flow of traffic is such that operational requirements cannot be satisfied and the lack of a compass locator would result in an unacceptable delay to arriving aircraft.

(3) In a radar environment where radar service cannot be provided on a continuous basis or where radar service will result in a prohibitive controller workload or would require additional positions and personnel to provide the radar service.

(4) In an area of precipitous or unusual terrain where special procedural design is required.

d. Approach Procedure Design. To the extent possible, ILS approach procedures must be designed to eliminate the compass locator as a required facility for the execution of the approach. Transitions must be established in accordance with the following:

(1) Original Procedures. In designing original procedures prior to ILS commissioning, transitions must be limited to those that can be established in accordance with the general guidelines contained in paragraph 7-5-2b unless a compass locator is programmed.

(2) Revised Procedures. Following facility commissioning, additional transitions originating outside of the normal clearance and buffer areas may be established if they are found to be satisfactory through flight inspection evaluation.

(3) Use of DME. The use of DME to provide arc transitions or to provide additional means of identifying fixes can provide flexibility for users that are DME equipment. However, DME arc initial segments are not encouraged for reasons stated in paragraph 8-2-5g(4). DME fixes established where an arc transition intersects the ILS course must be named. If DME is the only means of providing transitions or fixes, a compass locator should be provided.

e. Action. Applicable Service Area Flight Procedures Team personnel should make a map study at all planned or programmed ILS locations to determine if a compass locator is required. Priority should be given to approve ILS projects. Following this determination, all requirements for locators must be included in the F&E budget or submitted as a reprogramming action. Justification for each locator must be provided by AeroNav Products by including an appropriate statement for each location as follows:

(1) Non-Radar Location. Conforms to paragraphs 7-5-2c(1) and (2).

(2) Radar Location. Conforms to paragraph 7-5-2c(3).

Section 7-6. Airport Planning

7-6-1. General.

a. Familiarity. Since runway location, configuration, and alignment with respect to associated navigation facilities determine the IFR capability of an airport, applicable Service Area Flight Procedures Team personnel should be thoroughly familiar with all airports existing or planned in their areas of responsibility. AeroNav Products specialists should have access to all available material relative to airport planning and development and be familiar with the AIP projects for which they are responsible. The RNGB will participate as an ad hoc team member for airport-planning issues at IFR airports desiring improved low weather operations, or where safety issues dictate Flight Standards involvement.

b. Airport Master Plans or layout plan changes coordinated by the Office of Airports should be routed through regional Flight Standards Divisions and applicable Service Area Flight Procedure Team personnel for review and comment. AeroNav Products should develop necessary coordination procedures with Airports Division personnel.

Section 7-7. Private Aid

7-7-1. General.

a. Informal Discussions. Regional Flight Standards and applicable Service Area Flight Procedures Team personnel will be called upon frequently by municipalities, private interests, or other government agencies for recommendations relative to the location and type of instrument approach facilities most practicable. This type of cooperation is encouraged. However, it should be made clear that informal discussions with sponsors of private facilities (non-Federal) are advisory in nature and do not necessarily represent the FAA's official position nor commit it to a particular course of action. AJW-3 personnel should be familiar with the guidance in Order 6700.20, Non-Federal Navigational Aids and Air Traffic Control Facilities, regarding establishment of non-Federal NAVAIDs.

b. Proposal Process. Before private facilities can be installed and operated for private or public IFR procedural use, the proposal must be processed for airspace analysis and frequency allocation study. Also, agreements for the inspection and acceptance must be drawn in accordance with 14 CFR Part171 or other applicable Administration directives. Requests received for establishment of non-Federal electronic air navigational aid facilities must be forwarded to the appropriate Air Traffic Technical Operations Service Areas for initial processing [see Order 6700.20, paragraph 13].

c. Sponsor Advice. Occasions will arise where a sponsor will seek advice concerning the use of a new type of navigational facility or a type that is not approved for use by the FAA. In these situations, regional Flight Standards and Flight Procedures Field Office (FPFO) personnel must make no commitment with respect to the acceptability, installation, or procedural use of such facilities. Refer inquiries of this nature to the Washington Program Office for information and advice concerning appropriate handling of such matters. Sponsors of private facilities should be advised to direct formal requests or inquiries, relating to the approval and use of private facilities, to the appropriate Air Traffic Technical Operations Service Area for necessary review and processing. Contact Flight Standards, AFS-400, for advice regarding the impact of new/emerging technologies on the facility proposal.

Section 7-8. Facilities and Equipment (F&E) Support

7-8-1. Support.

a. At the regional level, the responsibility for identifying improvements to operational minimums or for establishing safety requirements is jointly shared by the applicable Service Area Flight Procedures Team staff and the respective regional Flight Standards Division (FSD). Section 1-2 specifies primary responsibilities of each organization. Additionally, each organization has unique skills and expertise that, in many situations, can be combined in a teamwork approach in the area of airport and navigational facility planning. AeroNav Products personnel serve in a team leadership role for the region in developing and recommending improvements to IFR procedures, operational minimums, and associated facilities.

b. It is expected that an AJW-3/AFS team approach will provide a method for regional Flight Standards input on behalf of system users and operators, which addresses operation and safety concerns. Each team should establish a means of submitting its respective organization's input to the regional F&E budget.

c. The FSD also submits written justification for visual aids (not associated with IFR airports) and provides technical advice for IFR studies or recommendations that may not meet established standards; e.g., require AFS approval for waiver or (National Airspace System (NAS) Change Proposal (NCP).

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Chapter 8. Instrument Approach Procedures Data Transmittal System

Section 8-1. General

8-1-1. General.

a. FAA Forms. 8260-series forms are used for the documentation and publication of instrument flight procedures. AeroNav Products and other charting agencies publish instrument flight charts based on data contained on these forms. Documentation examples provided throughout this order are to be used to promote standardization and clarity for chart producers and product users. However, these examples do not cover every situation. When these situations occur, contact AeroNav Products Quality Assurance (QA) staff for guidance.

Section 8-2. FAA Form Use and Preparation

8-2-1. Use of FAA Forms.

a. Procedures published under Title 14, Code of Federal Regulations (14 CFR) Part 97. Standard Instrument Flight Procedures (SIAPs), fixed-wing and helicopter, authorized for public use are approved by AeroNav Products and published as rules in the Federal Register by Flight Standards Service (AFS-1) using reference to FAA standard forms. An index of all original SIAPs, amendments, and cancellations is published in the Federal Register to provide public notice of the rulemaking actions.

b. Instrument approach procedures must be prepared on the forms listed below or approved computer generated equivalents, as suitable for reproduction.

(1) Form 8260-3, ILS Standard Instrument Approach Procedure, [ILS, RNAV (GPS or RNP), and LDA (when associated with a glide slope)].

(2) Form 8260-4, Radar Standard Instrument Approach Procedure.

(3) Form 8260-5, Standard Instrument Approach Procedure, [LOC, LOC/DME, LDA, LDA/DME, VOR, VOR/DME, VOR/DME or TACAN, NDB, SDF, VOR/DME RNAV, and other nonprecision procedures].

(4) Form 8260-10, Continuation page of Standard Instrument Approach Procedure, is used as a continuation sheet for instrument approach procedure forms listed above, and for direct-to-fix (DF) procedures.

c. Special Use Procedures. Special use instrument approach procedures are documented on Form 8260-7A. A Form 8260-7B must also accompany the Form 8260-7A when issued to an operator. These procedures are developed for individual operators and are issued to the user through Operations Specifications or Letters of Authorization [see Order 8260.60, Special Instrument Procedures].

d. Forms 8260-15A, B, and C, Departure Procedures/Takeoff Minimums. Use 8260-15-series forms to document departure procedures (DPs) and takeoff minimums. A Form 8260-15A must be completed for each airport with approved instrument procedures, even if takeoff minimums are “Standard.” Form 8260-15B is used to document graphic DPs. Form 8260-15C is used to document the associated data record for area navigation (RNAV) DPs. Refer to Order 8260.46, Departure Procedure (DP) Program, for instructions.

8-2-2. FAA Form Preparation.

a. Preparation. All entries may be in upper case letters or as defined in the examples in this chapter. Form 8260-3 has the title information and appropriate 14 CFR Part 97 subpart pre-printed. When other procedures are documented, delete the term “ILS” and substitute the desired equipment acronym in its space. Form 8260-4 has the title information and appropriate 14 CFR Part 97 subpart pre-printed. On Form 8260-5, enter the type of procedure, as listed below, in the space preceding the phrase “Standard Instrument Approach Procedure.” For direct-to-fix (DF) procedures on Form 8260-10, enter “Emergency DF” and leave the 14 CFR Part 97 subpart blank. For instrument procedures developed by the FAA for the Department of Defense (DoD) that are not processed under 14 CFR Part 97, in place of the 14 CFR Part 97 subpart portion on the applicable FAA Form, insert the applicable abbreviation for the service component; i.e., “USA” for United States Army, “USAF” for United States Air Force, and “USN” for United States Navy. See Order 8260.15, United States Army Terminal Instrument Procedures Service, for processing of USA procedures and Order 8260.32, United States Air Force Terminal Instrument Procedures Service, for processing of USAF procedures.

b. Appropriate 14 CFR Part 97 subparts for individual types of procedures are:

(1) 97.23 VOR, VOR/DME, TACAN, VOR or TACAN, and VOR/DME or TACAN.

(2) 97.25 LOC, LOC/DME, LDA, LDA/DME, SDF, and SDF/DME.

Note: LDA and LDA/DME includes those that also may have a glideslope.

(3) 97.27 NDB and NDB/DME.

(4) 97.29 ILS, GLS, WAAS PA, and RNAV.

(5) 97.31 RADAR.

(6) 97.33 RNAV (includes VOR/DME, RNP, LNAV, LNAV/VNAV, LP, and LPV).

(7) 97.35 COPTER (includes all Copter SIAPs, regardless of navigation sensor).

(8) 97.37 Takeoff Minima and Obstacle Departure Procedures.

c. Combined Charting. Certain instrument approach procedures can be combined on one chart where procedural data are compatible. Where an non-directional radio beacon (NDB) or compass locator is established at an instrument landing system (ILS) outer marker site, the individual ILS and NDB procedures should be developed in a manner that will permit combined charting, provided terminal instrument procedures (TERPS) criteria can be complied with for both procedures. Different types of civil instrument approach procedures must not be combined on SIAP forms except for “ILS or LOC,” “ILS or LOC/DME,” “VOR or TACAN,” and “VOR/DME or TACAN” SIAPs predicated on VORTAC facilities. SA category (CAT) I and SA CAT II procedures may be combined on the same chart. CAT II and CAT III procedures may be combined on the same chart. Where military offices request combined procedures based on different types of facilities, document separate but compatible procedures on the appropriate forms. Combining of instrument approach procedures on military charts will then be accomplished as a cartographic function of the National Geospatial- Intelligence Agency (NGA). RNAV SIAP charts may only depict a single procedure track from the IF through the missed approach. If different tracks are required inside the IF (e.g., for different aircraft categories), separate procedures must be published.

8-2-3. Course and Distance Information.

a. Application. Assigned magnetic variation must be applied to terminal routes as follows [see paragraph 8-6-8n]:

(1) Facility to Facility: Variation of the first facility applies.

(2) Dog leg: Variation of each facility forming the route applies to its segment.

(3) Fix to Facility or Facility to Fix: Variation of the facility applies.

(4) RNAV Routes: See paragraph 2-5-3f(2).

(5) Dead Reckoning: Variation of the next facility providing course guidance applies.

b. Calculations must be made using the most accurate data available (bearings and distances to two decimal places). Magnetic variation of record, in whole degrees, is then applied.

c. Data Elements. Except where otherwise noted, enter data elements relating to course, bearing, and distance to the nearest hundredth value. Final results are rounded by AeroNav Products.

d. Rounding. Where rounding to the "nearest" value is appropriate, and except where otherwise required, round numerical values .01 through .49 DOWN, and .50 through .99 UP. This applies to distances, elevations, altitudes, degrees, etc. For example, 1100.49 feet becomes 1100 feet, while 1100.50 feet becomes 1101 feet. Similarly, 131.49 degrees becomes 131 degrees, while 131.50 degrees becomes 132 degrees.

8-2-4. Communications Data.

a. Communications requirements and frequencies for inclusion on instrument approach procedures charts will be provided by National Flight Data Center (NFDC).

b. Where specific local communication requirements exist for published instrument approach procedures, enter one of the following under "Additional Flight Data:"

(1) Where approach control service is provided by Air Route Traffic Control Center (ARTCC) through a remote site: "Chart Indianapolis Center frequency."

(2) Where approach control service is provided through the controlling Flight Service Station (FSS) by LRCO or RCO. The controlling FSS will be indicated: "Chart Indianapolis Radio LRCO (RCO)."

(3) Where the primary altimeter source is obtained from a remote (different airport location) Automated Weather Observing System (AWOS)/Automated Surface Observing System (ASOS), chart the airport location: "Chart Flippin Muni AWOS-3."

8-2-5. Terminal Routes General. Terminal routes consist of feeder, initial, and intermediate approach segments. They provide aircraft guidance from the en route airway structure to the final approach fix. Specify a minimum number of routes required to satisfactorily transition the aircraft to the terminal environment.

a. Non-Radar Routes. Since radar vectoring is an approved method of providing procedure entry, limit the number of non-radar routes where radar vectoring is provided on a 24-hour basis. Where practical, provide at least one non-radar route to ensure transition from the en route structure in the event of radar/communications failure. Radar vectoring may be provided through any approach segment up to and including the final approach fix (intermediate fix with ARSR). See paragraphs 4-1-5q and 8-6-6g.

b. Transition. Do *not* develop instrument approach procedures that require “DME or Radar” as the sole means for procedure entry if any other type of transition is available, unless specifically requested by Air Traffic Control (ATC). It is not necessary to designate terminal routes which coincide with segments of the en route structure; however, these routes must be designated when a lower altitude is authorized or when clarity is essential. With the exception of arc feeder segments, terminal routes (including arc initial approach segments) originating on an airway at other than a navigation facility require the establishment of a named fix to identify the starting point of the route. The fix must be common to the en route structure and instrument approach procedure. See paragraph 8-6-6g(2).

c. Turn Limitation. When a procedure turn or holding pattern entry is not authorized, and airways or routes, which are not specified as terminal routes lead to the fix where the intermediate segment begins, the procedure must ensure that the angular limitation on turns over the intermediate fix is not exceeded. This is not mandatory when ATC agrees to provide full-time radar vectoring service for these routes.

d. Charting. All terminal routes listed in the Terminal Routes section of the 8260-series forms must be charted or identified in the planview of the instrument approach chart.

e. Feeder Routes. Where feeder routes are required to transition from the en route structure, they must terminate at another feeder fix, or an initial approach fix, or at the facility from which a procedure turn or holding pattern entry is authorized. En route obstacle clearance criteria apply to feeder routes.

f. Multiple Distance Measuring Equipment (DME) Sources. When an ILS (or LOC or LDA) facility has collocated DME, it is necessary to reduce the potential for confusion with other DME sources in the terminal area. Failure to tune to the ILS DME when inbound can result in incorrect fix indications. Apply the following guidance:

(1) Delete the requirement to use two DME facilities on ILS or LOC/LDA procedures wherever possible.

(2) Delete DME arcs to LOC/LDA courses at locations where radar vectoring is possible. In some locations, this may require a planview note: “Radar Required.” See paragraph 8-6-6h. Where radar is not available, delete DME arcs where an alternate means of procedure entry is available.

(3) On procedures using two DME facilities, one of which is associated with a LOC or LDA, and both of which are forward of an aircraft on the LOC/LDA course, the following is required: "Chart profile note: Use I-XXX DME when on the localizer course." This applies to front and back course procedures regardless of glide slope availability.

g. Initial Approach Segments.

(1) Initial Approach Segments not requiring a Course Reversal. Evaluate the flow of air traffic to determine the need for routes that do not require a course reversal, i.e., fixes, standard terminal arrival routes (STARs), airways, waypoints. Where a route can meet alignment and descent gradient requirements, a course reversal should not be established. Where a course reversal has been established on an instrument approach, initial segments which meet alignment and descent gradient requirements for a straight-in approach must have a designation of "NoPT" for that applicable route [see paragraphs 4-1-5i and 8-6-2a(3)]. When a STAR terminates at an IF/IAF and alignment and descent gradient requirements are met that do not require a course reversal, in the Notes section of the 8260-series form use: "Chart planview note: NoPT at (fix name) for arrival on (procedure{s} name) Arrival" (this may result in more than one note for NoPT authorization). If a course reversal is not authorized for any of the terminal routes, the NoPT designation is not appropriate; indicate instead that a procedure turn is not authorized [see paragraph 8-6-3a(3)].

(2) Specify an arrival sector from which course reversal must not be made when NoPT designations will result in an excessive number of terminal routes. Place an applicable statement in the Notes section of the 8260-series form.

Examples:

When a course reversal is over a facility:
"Chart planview note: NoPT for arrival on ABC VORTAC airway radials R-302, R-355, and R-096."

When a course reversal is over a fix:
"Chart planview note: NoPT for arrival at NICOL on V244 Westbound, V230 Southwest bound."

When an IAF is over a facility:
"Chart planview note: Procedure NA for arrival on ABC VORTAC airway radials 233 CW 338."

When an IAF is over a fix on an airway:
"Chart planview note: Procedure NA for arrivals at RUDVE on V140 Westbound, and arrivals at MCJEF on V140 Eastbound."

(3) Initial Approach segments based on straight courses. All initial approach segments that meet criteria for angle of intercept between the initial and intermediate segments, Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), Volume 1, paragraphs 232a(1) and (2), must join the intermediate segment at a common intermediate fix

where possible. Where more than one segment joins at a common fix, a common altitude should be selected whenever descent gradient is not compromised.

(4) Arc Initial Approach Segment. Requirements for arc initial approach segments must be fully evaluated to determine if this type of procedure entry is essential to the local traffic flow. Experience indicates that arc initial segments have been established at locations where they are used on a very limited basis or have not been fully accepted by the user. Long arcs and/or multiple arcs have contributed to undesirable chart clutter with minimum operational advantage.

(a) An arc initial segment in a radar environment must not be authorized unless it is operationally required.

(b) When a DME arc segment of an approach lies along an arc that traverses an area of unusable radial information, the provisions of Order 8200.1, chapter 6, paragraph 6.12 apply.

(c) Arc initial segments should be authorized via the shortest routing when flight time can be reduced.

(d) Arc initial segments must be designated by CW for clockwise and CCW for counter-clockwise.

(e) Arc initial segments must be designed to satisfy requirements for executing the instrument approach. They must *not* be established for the convenience of routing aircraft around a terminal area.

(f) Arc initial segments less than 3 miles in length are not recommended. Use of aircraft heading to intercept the intermediate course should be considered as an alternate action in lieu of short arc segments.

(g) DME Arc courses must be predicated only on collocated facilities providing azimuth and DME information. Arc initial segments must not be authorized on DME collocated with ILS or localizer facilities due to the lack of constant azimuth information. See Order 6050.32, Spectrum Management Regulations and Procedures Manual, appendix III, section 2 for collocation parameters.

(5) An arrival holding pattern may be established at the beginning of an initial segment when requested by ATC to support local operational needs. An arrival holding pattern must not be used to function as a “hold-in-lieu of procedure turn” in order to accommodate descent gradient requirements and/or used to mandate a course reversal.

Note: A hold-in-lieu-of-PT is only permitted at a final approach fix (FAF) (non-RNAV procedure) or at the beginning of the intermediate segment (see Order 8260.3, Volume 1, paragraph 234e).

h. Lead Radials. In addition to the angle of interception requirements of Order 8260.3, Volume 1, paragraph 232a(1), a two-mile lead radial (1 mile for Copter procedures) must be published with arc initial approaches when the DME is not collocated with the facility providing the procedural course guidance. The lead radial provides information for aircraft with single receiving equipment to change the receiver to the localizer or other facility providing the course guidance and to ensure the aircraft is within the clearance coverage area of localizer (LOC) facilities before changing frequency or accepting on-course indication.

i. Intermediate Segments.

(1) When a procedure turn or holding pattern entry is authorized at the FAF and a straight-in intermediate segment (without initial) is also authorized, data on the intermediate segment must be included in the Terminal Routes block. In this situation, add (IF) and (NoPT) to the intermediate segment.

(2) When the course reversal fix is outside the FAF, the segment(s) from the course reversal fix to the FAF must be included in Terminal Routes, unless both fixes are marked by DME from the same source or LOC minimums are not authorized.

(3) When a procedure turn or holding pattern in-lieu-of-PT is not authorized, enter pertinent data in the Terminal Routes section and on lines 2 and 4 of the 8260-series form. Refer to paragraph 8-6-3b(2).

(4) Develop intermediate segments for all IAPs except “hold-in-lieu-of-PT” and “PT No-FAF” procedures. Where an intermediate fix has been established, it will be defined on the procedure in the planview and profile view. See paragraph 8-6-3b(3) exception for profile view charting when there are multiple intermediate segments in the instrument approach procedure (IAP).

j. RNAV procedures must have a hold-in-lieu-of PT course reversal maneuver established at the waypoint designated as “IF/IAF” (when one is established) on all procedures based on the “Basic T” design and its derivations. If the waypoint is identified only as “IF,” a hold-in-lieu-of PT is not required.

8-2-6. Terminal Fixes. Name terminal fixes in accordance with paragraph 2-10-5 and document on Form 8260-2. Named facilities do not require this documentation unless holding is established.

a. Computer Navigation Fixes (CNF). Name CNFs using a five-alpha character non-pronounceable name. To distinguish CNFs from conventional reporting points, fixes, and intersections, enclose the name in parenthesis; e.g., (CFWBG) on 8260-series forms other than the Form 8260-2.

b. Audit Trail. List terminal procedures using a fix in the “Fix Use” section of the Form 8260-2. This helps ensure that affected procedures are not overlooked when the fix is modified.

c. DME References. When designating fixes on Forms 8260-3, -4, -5, and -7A include DME references to the hundredth of a nautical mile (NM) when DME is appropriate and available. Provide the fix name and DME distance as follows:

(1) DME fix, with course and DME from the same facility:

JOANI/7.00 DME

(2) DME fix, with DME not paired with course facility, identify fix and facility providing DME: JOANI/ABC 7.00 DME. If both facilities have the same three-letter identifier, fully identify the DME facility: JOANI/XYZ VORTAC 7.00 DME.

(3) Intersection fix, with DME available from more than one facility forming the fix, identify the intersection and the facility providing the required DME information: JOANI INT/ABC 7.00 DME. If both facilities have the same 3-letter identifier, fully identify the DME facility: JOANI INT/XYZ VORTAC 7.00 DME.

d. A full description of a fix must be documented on the form. For RNAV procedures, describe a fix by name only. AeroNav Products will chart fixes under what is known as the "hierarchy concept." This means if no NAVAID or ground-based fix exists, the point will be charted as a waypoint. Except for RNAV procedures, when a fix is included in the missed approach instructions, use a full description of a fix appropriate to its use in the missed approach procedure.

Example:

Fix name: MORIS LOM/INT/7.00 DME. "CLIMB TO 3600 DIRECT MORIS LOM/INT/7.00 DME AND HOLD."

Fix name: DAVEE INT/16.00 DME. "CLIMB TO 3600, THEN CLIMBING RIGHT TURN TO 4000 on ABC VORTAC R-180 TO DAVEE INT/16.00 DME AND HOLD."

RNAV Example:

"Climb to 2000 direct DAKEY and hold."

e. When no fix overlies an LOM, the identifier or the five-letter name may be used: AB LOM or ABBAH LOM.

f. An alternate method of identifying an LOM, such as an INT or DME, is often helpful in ILS or LOC SIAPs but an INT is not appropriate in NDB SIAPs.

g. Along Track Distance (ATD) References. Include ATD fix values with respect to the missed approach point (MAP) on all named and unnamed (VDP) fixes within a RNAV final approach segment [see paragraph 8-6-8q for VDP application].

Example:

MAP at LTP: "IDEDE/3.50 NM TO RW16"
MAP not at LTP: "BARBB/3.50 NM TO CORDL"

h. RNAV must not have a hold-in-lieu-of-PT (course reversal) or missed approach holding established at the FAF.

Section 8-3. Certification, Processing, and Review

8-3-1. General. Certifying, processing, and reviewing instrument approach procedures must be accomplished as outlined in this section.

8-3-2. Certification and Distribution of SIAPs. Certification of instrument approach procedures must be accomplished on the reverse side of the appropriate FAA 8260-series form. Instructions for completion of the entries are as follows:

a. All Affected Procedures Reviewed. Enter "X" in the appropriate space. A "Yes" indicates that all requirements for a periodic review have been accomplished for all procedures documented on the specific form being completed. However, consideration must be given to items that may affect other procedures to the same runway/airport. A "No" indicates that only the items listed in the "Changes" block were reviewed [see paragraphs 2-8-1 and 8-3-4c].

b. Coordinates of Facilities. When a facility is referred to on a procedure for the first time, enter the facility coordinates. The source data for the coordinates must be identified; e.g., AF survey, ALP, OC, Map Study, AJW-3, NOS, etc. If sufficient space is not available to list coordinates of all new facilities, the space under "Changes" must be used. Leave blank for RNAV procedures.

c. Required Effective Date. The effective date must be either "Routine," "Concurrent," or "Hard." See Order 8260.46 for guidance regarding effective date entries for departure procedures.

(1) Routine Dates. If a specific effective date is not required, enter the word "ROUTINE."

(2) Concurrent Dates. If the SIAP is part of a large package and/or publication is to be concurrent with another event, as when it is associated with an airspace case, enter the word "Concurrent." Use the following standard Note in the lower part of the Reasons block: "Effective concurrent with KOKC ILS RWY 17R Amdt 8," or "Effective concurrent with Airspace Docket 02-AGL-29."

(3) Hard Dates. Hard dates only apply to procedures based on navigation facilities receiving a magnetic variation rotation, all other associated procedure changes based on a magnetic variation change will use the concurrent date, see paragraph 8-3-2c(3) above. For example, a very high frequency omni-directional range (VOR) is rotated and the VOR approach will have the hard date, but the RNAV approaches at that location would use the concurrent publication date. When a hard date is required, enter the applicable AIRAC cycle date the procedure must be published on, e.g., 12/10/15. Use of hard dates requires updating the NFDC database and publication in the National Flight Data Digest (NFDD) 51 days prior effective date for en route data and 34 days for non-en route data. Hard dates are not to be used as an "easy to use" option.

(4) Deviations. Refer to Order 8260.26, Establishing and Scheduling Civil Public-Use Standard Instrument Procedure Effective Dates, when deviations to the above guidance, procedure submission cutoff suspenses, and effective date assignment are required.

d. Coordinated With. Coordinate all original processing and revisions to instrument approach and departure procedures with appropriate civil aviation organizations, the appropriate ATC facilities, and the airport owner or sponsor. Coordinate with appropriate Flight Standards District Offices (FSDO) according to the type of operations conducted at the airport. Coordinate with other interested organizations as necessary. A copy of the graphic sketch required by paragraph 8-7-1e must be included in all procedure packages that are submitted for coordination. Coordinate procedures with Airlines for America (A4A) if the airport is served by scheduled air carriers. Coordinate all 14 CFR Part 97 SIAPs and all DPs with the Air Line Pilots Association (ALPA). Coordinate with Allied Pilots Association (APA) for procedures at airports used by American Airlines. Coordinate helicopter procedures with Helicopter Association International (HAI).

Note: This coordination action is required to provide advance notice to the user organizations that a change to 14 CFR Part 97 is being initiated. These instrument procedures will be posted on AeroNav Products web site. Civil aviation organizations that are requested to coordinate on these procedures will receive an e-mail alerting them of the procedure posting. Those receiving this notification then have 20 working days in which to review the procedures and respond to the indicated actions during the period that the procedure is being processed. Any substantive adverse user comments during this period permit sufficient time to amend or withdraw the paperwork prior to publication. Evaluation and disposition of user comments are the responsibility of AeroNav Products; and all comments must be considered before the procedure is forwarded for publication. Valid user comments, which cannot be reasonably accommodated by AeroNav Products, should be referred to AFS-460 for resolution prior to submission of the procedure for publication [see also paragraph 4-2-2].

(1) Enter "X" in the appropriate aviation organization spaces.

(2) Designate additional organizations or offices if additional coordination is to be accomplished.

e. Flight Checked By. Enter the name of the airspace system inspection pilot (ASIP) who conducted the flight inspection and date flight inspection completed. The flight inspection procedures control form must be maintained with the procedure package. The 8260-series forms supporting IFPs require the signature of the flight inspection pilot or other authorized AJW-3 designated representative signifying flight inspection completion. If a flight inspection is *not* required, enter "Flight inspection not required" and the name, title, and signature of the Flight Inspection/validation official who makes that determination. Include the date of the most recent flight inspection of the SIAP. Use the word "pending" only if the procedure is submitted prior to flight check under Order 8260.26 or if publication is required on a specific charting cycle date. An entry in this block indicates the procedure:

(1) Was flight checked in accordance with applicable directives and standards.

(2) Is approved for further processing and publication.

f. Submitted By. Enter the name, signature, company name, and date authorized by the non-governmental entity that designed the procedure. This block is only found on the Form 8260-7A.

g. Developed By. Enter the name, office symbol, and signature of the person responsible for developing the IFP, and the date developed.

h. Approved By. Enter the name and signature of the AeroNav Products Manager, or his/her designated representative, and the date signed for instrument procedures developed by the FAA. Companies developing instrument procedures under an Other Transaction Agreement (OTA) with the FAA have the approval authority for those procedures and must complete this block. See additional approval instructions for Form 8260-7A in paragraph 8-8-3d. Signature in this block certifies that the procedure:

(1) Was developed in accordance with appropriate policies, directives, standards, and criteria.

(2) Is approved for further processing and publication.

i. Changes and Reasons. The purpose of these entries is to keep charting agencies and coordinating offices advised of major procedural changes. The listing of changes should include all revisions (except clerical) and the reasons should contain sufficient details so that the cause for the procedural amendment will be clear to the reviewing offices.

8-3-3. Cancellation/Suspension of Instrument Approach Procedures. Cancellation/ suspension of instrument approach procedures must be accomplished on the same form number as required for documentation of the SIAP.

a. Cancellation of a SIAP. All items on the front side of the forms must be left blank, except type of procedure and the City, State line. This line must duplicate the currently effective SIAP. The following notation must be typed in the Notes section: "Procedure canceled effective ___________." (AeroNav Products will fill in the date). On the reverse side of the form, complete the "Coordinated with," "Developed by," and the "Approved by" blocks. If applicable, enter in the lower portion of the Reasons block: "Concurrent with VOR RWY 18, Original."

b. Suspension of a SIAP. If a procedure must be removed from a publication temporarily due to the 224-day time limit for Temporary NOTAMs, it can be suspended for an indefinite time period. These "Suspended" procedures will continue to be maintained (to include periodic flight inspection, if possible, and obstacle evaluation (OE) applications). Document on the applicable 8260-series form, "Procedure suspended effective__________" in the Notes block (i.e., the same process as if it were a cancellation, including signature blocks) and in the Reasons block, provide a reason for the suspension and an estimated publication return date, if unknown, state "Indefinite." When the procedure is ready to be re-published, attach a copy of the suspended procedure to a new Form that will serve as a cover sheet that must contain, "Procedure reinstated effective__________" in the Notes block. However, if the procedure has to be Amended at the time of reinstatement, process the procedure as if it were a regular Amendment and as the first (top) entry in the "Additional Flight Data" block, enter: "Reinstated

Procedure-Amended." The suspension and reinstatement must be published in the Transmittal Letter (TL) with all the other procedures to ensure charting agencies react accordingly.

8-3-4. Revisions to Instrument Flight Procedures (IFPs). Some amendments to SIAPs and textual obstacle departure procedures (ODPs) may qualify to be administered via P-NOTAM as specified in paragraph 2-6-3. When a P-NOTAM is not used, complete, and process revisions to IFPs using the applicable 8260-series form. The guidelines listed below apply. Table 8-3-1 is provided to assist in the application of the guidance identified below.

Note: The purpose of the Procedure Amendment process is to provide an expeditious means to incorporate changes to IFPs. Cancelation and reissue of an IFP is permitted when deemed necessary and for reasons other than listed below.

a. Cancellation of an existing procedure and establishment of an original procedure is required when:

(1) The 14 CFR Part 97 subpart changes as a result of a change in equipment required to fly the procedure; e.g., "LOC" to "ILS or LOC;" "ILS" to "LOC;" etc. [see paragraph 8-2-2b].

(2) The procedure ID is changed from "VOR-A" to "VOR-B," etc.

(3) An "L," "C," or "R" designation is added or removed from the procedure title; e.g., "VOR/DME RWY 18L/R" is changed to "VOR/DME RWY 18L."

(4) The navigational aid (NAVAID) providing final course guidance is relocated and the relocation changes the published final approach course ground track.

(5) The reference NAVAID is changed to another facility on a VOR/DME RNAV procedure.

(6) Straight-in minimums are added or deleted that require change to the procedure ID; e.g., "NDB RWY 28" to "NDB-A" or "NDB-A" to "NDB RWY 28."

(7) When a Special procedure is converted to a public, 14 CFR Part 97, procedure.

(8) When a runway is re-located and the parameters exceed the values in paragraph 8-3-4e(2)(a), and the current numbering is retained; e.g., runway 14/32 is moved 400 feet NE of its current position.

b. Procedure Amendments. When a procedure is amended, the amendment number must be advanced and "Yes" checked in the "All Affected Procedures Reviewed" block indicating that periodic review requirements have been met for all the procedures documented on the specific form being completed (see paragraph 8-3-2a). Amendment of a procedure is required when:

(1) The airport name is changed.

(2) The associated city/state is changed.

(3) The name, facility type, and/or identifier of any NAVAID is changed, including those mentioned in the "Additional Flight Data" and "Missed Approach" blocks of the 8260-series form.

(4) Any NAVAID or marker beacons used in the procedure are decommissioned,

(5) The runway numbering is changed.

(6) A secondary equipment requirement is added to or deleted from the procedure and the procedure ID does not change; e.g., adding "DME Required" Note.

(7) The Procedure ID changes; e.g., from "GPS" to RNAV (GPS);" "VOR/DME" to "VOR/DME or TACAN"; "ILS" to "ILS or LOC/DME." This includes the addition/deletion/modification of any straight-in procedure suffix; e.g., from "RNAV (GPS) RWY 36" to "RNAV (GPS) Z RWY 36."

(8) Adding a segment to an instrument procedure (see paragraph 8-3-4c below).

(9) Deleting a segment of an instrument procedure.

(10) Changing any published fix location or makeup (see paragraph 8-3-4c below).

(11) Changing any published fix name only.

(12) Changing a charted "magnetic" course/bearing/heading that does not alter the existing ground track.

(13) Changing a charted course/bearing/heading that would alter the existing ground track (see paragraph 8-3-4c below).

(14) Increasing an altitude.

(15) Lowering an altitude (see paragraph 8-3-4c below).

(16) Any published distance is changed which:

(a) Requires a change to the Time/Distance Table.

(b) Is 0.1 NM or greater for distances inside the FAF.

(c) Is 0.5 NM or greater for distances outside the FAF.

Note: For non-RNAV procedures only, when any published distance is changed which is less than 0.5 NM for distances outside the FAF, or less than 0.1 NM for distances inside the FAF, the change may be delayed until the procedure is next amended.

(17) Any minimums change to include adding another line of minimums (including CAT II/III and SA CAT II), deleting minimums, increasing minimums, lowering minimums, and returning minimums to their previous value after a temporary condition. An amendment is also

required when adding SA CAT I minimums to a runway where standard CAT II minimums have not been established (see paragraph 8-3-4c below).

(18) The airport elevation or touchdown zone elevation is changed and minimums are affected. When published minimums are not affected, include these changes in the next amendment [see paragraph 8-3-4e(2) below].

(19) Frequencies are changed in notes on the Forms 8260-3/4/5/7A, or military equivalent.

(20) Lighting changes occur that affect published visibility and/or renders a procedure unusable at night.

(21) Changes to plan view, profile view, or briefing strip chart notes.

(22) Changes to charted obstacles that are identified on the 8260-series form, in the "Additional Flight Data" block.

c. Abbreviated Amendments. An abbreviated amendment differs from an amendment in that not all forms are re-accomplished and in some cases, flight inspection is not required. However, it is recommended that changes be coordinated with flight inspection to determine what type action is required. All of the items in paragraph 8-3-4b may be promulgated via an abbreviated amendment except those listed in paragraph 8-3-4b(8), (10), (13), (15), and (17). An abbreviated amendment may not be used to establish another line of minimums or lower minimums. Exception: An abbreviated amendment may be used to return minimums to their previously published level at the end of a temporary condition, or to add SA CAT I minimums to runway with an existing standard CAT II procedure. When required, first promulgate the changed condition via T-NOTAM and follow up with only the source 8260-series form(s). When completing the 8260-series form to support an abbreviated amendment, apply the following:

(1) Revise the amendment number to an alphanumeric format by adding an alphabetical suffix following the amendment number; e.g., Amdt 3B; Orig-A.

(2) Update the 8260-series form to reflect all previous P-NOTAM amendments not yet incorporated on the form.

(3) Check "No" in the "All Affected Procedures Reviewed" box of the form because periodic review requirements are not met.

(4) Complete the "Changes" and "Reasons" blocks of the form indicating the changes in the T-NOTAM as well as those of previous P-NOTAMs incorporated. Include cancellation of the T-NOTAM. Be specific in indicating the changes and reasons, e.g., "MDA changed from 880 to 820 feet"; "MDA returned to previous altitude; temporary crane removed."

(5) Enter "Routine" as the required effective date.

(6) Coordinate changes with appropriate organizations, as necessary.

d. No amendment is required when:

(1) Frequencies are changed which were *not* entered in notes on the Forms 8260-3/4/5/7A, or military equivalent.

(2) When the name of an airport mentioned in the "Notes" block of the FAA 8260-series forms is changed; e.g., "Use Batesville/Batesville Regional Altimeter setting."

(3) Changes to uncharted obstacles, names of secondary airports shown in the Planview, lighting and communications items included in the "Additional Flight Data" block of the 8260-series form.

(4) Lighting changes occur that do *not* affect published visibility.

(5) Fix coordinates are changed, which do not require a change to the procedure chart or any FAS data block items on localizer performance with vertical guidance (LPV) or localizer performance (LP) SIAPs that may affect the cyclic redundancy cycle (CRC) remainder code [see paragraph 8-3-4b(11)].

e. Changes to the NAS infrastructure that require procedure amendments under subparagraphs 8-3-4b and c above must be pre-coordinated with AeroNav Products by the NFDC to become effective on a 56-day AIRAC charting date and must be effective concurrent with procedure amendments. Every effort must be made to allow changes to be effective as soon as possible, but no later than one year after the receipt or as coordinated. This will ensure instrument procedure availability to the maximum extent possible, lessen impact on airport IFR operations, and ensure chart/database harmonization.

(1) When uncoordinated physical changes have been made; e.g., runways have been re-numbered, NFDC will not publish (e.g., in the NFDD) such changes until an agreed upon date. AeroNav Products will promulgate the information affecting the instrument procedure via the applicable NOTAM type, pending assignment of a coordinated effective date.

(2) AeroNav Products must be notified immediately of changes to airport reference points, airport field elevations, touchdown zone elevations, and runway threshold locations/elevations to assess the impact on instrument procedures. AeroNav Products is allowed 28 calendar days to evaluate reported changes, surveys, etc., and respond to the NFDC. If AeroNav Products does not respond to reported changes within 28 days, changes within the following tolerances may be promulgated via NFDD when verified.

(a) The following runway threshold parameter changes are deemed to have no impact on instrument approach procedures:

± 50 feet or less longitudinally
± 10 feet or less laterally
± 3 feet or less vertically

(b) Changes that exceed the tolerances above require immediate NOTAM action to ensure safety and procedural currency. Procedure amendments will be made within the specified timelines defined in section 2-8.

(3) All NAVAID position changes must be evaluated for impact by AeroNav Products prior to promulgating the revised information.

(4) Changes to airport identifiers must also be coordinated with AeroNav Products to assess the impact on instrument procedures. Airport identifier changes affect avionics coding for procedures and in some cases require procedure amendments.

f. AeroNav Products may change the following chart related products without supporting procedure amendments; i.e., P-NOTAM or 8260-series form:

(1) Marker beacons decommissioned and not identified as a FAF, step-down fix, or MAP on the procedure source document may be removed from chart depiction based on NFDD publication.

(2) Lighting changes may be made to airport sketches and the AFD when published in the NFDD.

g. Graphic Obstacle Departure Procedures (ODPs) and Standard Instrument Departures (SIDs). See Order 8260.46 for limitations when making chart changes.

8-3-5. Processing. When AeroNav Products quality review is completed, AeroNav Products must include the procedure in the Transmittal Letter for publication. Distribution must be in accordance with table 8-3-2. Additionally, forward a copy to users specified in paragraph 8-3-2d. [Refer to paragraph 8-8-3d for Special procedure distribution channels].

8-3-6. AeroNav Products Review of SIAPs and Charts. AeroNav Products must review and check Forms 8260-3/4/5/10, and the associated aeronautical charts published for variations from information submitted for publication. If any variance or charting discrepancies are identified, see paragraph 2-6-4 for action to be taken.

8-3-7. AeroNav Products Action.

a. FAA Forms Routing. Table 8-3-2 provides easy routing reference for AeroNav Products forms processing. Specific directive references are included for further guidance.

b. AeroNav Products must process Army forms as required by Order 8260.15, U.S. Army Terminal Instrument Procedures Service.

c. AeroNav Products must process United States Air Force procedures using FAA forms as required by Order 8260.32, U.S. Air Force terminal Instrument Procedures Service.

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Table 8-3-1.

Para #	**C** = Cancel & Reissue **A** = Amendment **B** = Abbreviated Amdt **P** = P-NOTAM **N** = Amdt not required					
		C	**A**	**B**	**P**	**N**
8-3-4a(1)	Title 14 CFR, Part 97 subpart changes as a result of a change in equipment required to fly the procedure; e.g., 'LOC" to "ILS or LOC"; "ILS" to "LOC", etc. [see paragraph 8-3b]	X				
8-3-4a(2)	Procedure ID changed from "VOR-A" to "VOR-B", etc.	X				
8-3-4a(3)	An "L", "C", or "R" runway designation is added or removed from the procedure title; e.g., "VOR/DME RWY 18L/R" is changed to"VOR/DME RWY 18L".	X				
8-3-4a(4)	NAVAID providing final course guidance relocated and causes final approach course ground track to change.	X				
8-3-4a(5)	Reference NAVAID is changed on a VOR/DME RNAV procedure.	X				
8-3-4a(6)	Straight-in minimums added or deleted that require change to the procedure ID; e.g., "NDB RWY 28" to "NDB-A", or "NDB-A" to "NDB RWY 28".	X				
8-3-4a(7)	Special procedure converted to a public,14 CFR Part 97 procedure.	X				
8-3-4a(8)	Runway moved and parameters exceed the values in paragraph 8-13e(2)(a), and the current numbering is retained; e.g., Runway 14/32 is moved 400 feet NE.	X				
8-3-4b(1)	Airport name change.		X	X	X	
8-3-4b(2)	Airport associated city name or state is changed.		X	X	X	
8-3-4b(3)	Name, facility type, and/or identifier of NAVAIDs are changed, including those mentioned in the "Additional Flight Data" and "Missed Approach" blocks of procedure forms.		X	X	X	
8-3-4b(4)	NAVAIDs/marker beacons are decommissioned.		X	X	X	
8-3-4b(5)	Runway numbering is changed.		X	X		
8-3-4b(6)	Equipment added/deleted, procedure ID does not change; e.g., adding "DME Required" note.		X	X	X	
8-3-4b(7)	Procedure ID changes; e.g., from "GPS" to "RNAV (GPS)"; "VOR/DME" to "VOR/DME or TACAN"; "ILS" to "ILS or LOC/DME". Includes addition/deletion/modification of any straight-in suffix; e.g., from "RNAV GPS RWY 36" to "RNAV (GPS) Z RWY 36".		X	X		
8-3-4b(8)	Add procedure segment [see paragraph 8-13c].		X			
8-3-4b(9)	Delete procedure segment.		X	X	X	
8-3-4b(10)	Change published fix location or makeup [see paragraph 8-13c].		X			
8-3-4b(11)	Change fix name only.		X	X		
8-3-4b(12)	Change in charted "magnetic" course/bearing/heading/track that does not alter ground track.		X	X		
8-3-4b(13)	Change in charted course/bearing/heading/track that alters ground track.[see paragraph 8-13c]		X			
8-3-4b(14)	Increase a procedure altitude.		X	X	X	
8-3-4b(15)	Lower a procedure altitude [see paragraph 8-13c].		X			
8-3-4b(16)(a)	Change to Time/Distance table.		X			
8-3-4b(16)(b)	Published distances inside the FAF change by 0.10 NM or greater.		X			
8-3-4b(16)(c)	Published distances outside the FAF change by 0.50 NM or greater.		X			
8-3-4b(17)	Add new line of minimums [see paragraph 8-13c].		X			
8-3-4b(17)	Remove minimums.		X	X		
8-3-4b(17)	Restore minimums to previous state following the end of a temporary condition [see paragraph 8-13c].		X	X	X	
8-3-4b(17)	Increase minimums.		X	X	X	
8-3-4b(17)	Decrease minimums [see paragraph 8-13c].		X			
8-3-4b(18)	Airport, threshold, or touchdown zone elevation changes that affect visibility minimums. [see paragraph 8-13e(2)].		X	X	X	
8-3-4b(19)	Frequency notes are changed on procedure forms.		X	X	X	
8-3-4b(20)	Lighting changes that affect visibility minimums and/or renders a procedure unusable at night.		X	X	X	
8-3-4b(21)	Changes to planview, profile view, or briefing strip chart notes.		X	X	X	
8-3-4b(22)	Changes to charted obstacles identified on 8260-series Forms in the Additional Flight Data block.		X	X	X	
8-3-4d(1)	Frequencies changed which were not entered in notes section of procedure forms.					X
8-3-4d(2)	Airport name mentioned in notes section of 8260-series forms is changed; e.g. "Use Batesville/Batesville Regional Altimeter Setting"					X
8-3-4d(3)	Changes to uncharted obstacles, names of secondary airports, lighting and communications items included in the "Additional Flight Data" block of the 8260-series forms.					X
8-3-4d(4)	Lighting changes that do NOT affect published visibility.					X
8-3-4d(5)	Fix coordinates change that do not affect the procedure chart or any FAS data block items on LPV or LP SIAPs that affect the CRC remainder code [see paragraph 8-13b(11).					X

Table 8-3-2.

FAA FORM	NFDC	AFS-460	OSG -FPT	ARTCC	ATCT	A4A, ALPA, APA. AOPA, NBAA, HAI	AeroNav Products Work File
8260-1 (Except Army)	AeroNav Products originates. Send to AFS-400 thru AFS-460. AFS-460 maintains Original Copy. A copy is forwarded AeroNav Products.						1
8260-1 (Cancellation)	AeroNav Products or AFS-400 cancels through AFS-460, giving date and reason. AFS-460 maintains Original Copy. A copy is forwarded to AeroNav Products.						
8260-2 (except Army)	Electronic Copy		1	1	1	*	1
	*RNGB distributes to users.						
8260-3/4/5/ 15A/B/C 8260-10 (Continuation)	Orig.		1	1	1	1	1
8260-15D			1	Orig to control facility	Orig to control facility	1	1
8260-10 (DF)	1		1	1	1 to DF control facility		Orig
8260-7A/B	Distribute as specified in Order 8260.60, paragraph 2-1-10.						
8260-9		If Special	1				Orig
8260-16	Orig		1	1		*	1
	* For Off-Airway routes. Applicable Service Area FPT distributes to users.						
ARMY: 8260-1/2/9/11/12/13/ 20/21/22/23/24	AeroNav Products originates. Send package to USAASA or USAASDE.						
			1				1
USAF: 8260-2/9/11/ 12/13/20/21			1				1
	Orig package to the Major Command TERPS Office						
7100-4	STAR package returned thru the Applicable Service Area ATC						1
Substitute Routes Letter Format	ORIG						1

Section 8-4. Flight Procedures Standards Waiver, FAA Form 8260-1

8-4-1. Preparation of Form 8260-1, Flight Procedures Standards Waiver. All waivers to Order 8260.3, U.S. Standard for Terminal Instrument Procedures (TERPS), and other TERPS-related FAA directives, must be initiated by the developer, and forwarded to the Flight Technologies and Procedures Division, AFS-400, through the Flight Procedure Implementation and Oversight Branch, AFS-460. See figures 8-4-1 and 8-4-2 for sample Form 8260-1. Itemized instructions for completing Form 8260-1 are as follows:

a. Control Number. Flight Standards will enter a control number that will be used for tracking.

b. Item 1. Flight Procedure Identification. Enter the city and state, official airport name, and the flight procedure identification (excluding amendment number).

c. Item 2. Waiver Required and Applicable Standard. Identify clearly and accurately what standard is requested to be waived; e.g., "Missed Approach Section 1 is not aligned with the Final Approach course. Order 8260.3, Volume 3, paragraph 3.9.1." Request only *one* waiver of standards on each form, and address the applicable standard(s) to be waived (Note: More than one reference may be applicable to what is being waived). When a procedure is amended, reprocessing of an existing waiver is not necessary unless the amendment directly impacts the basis for the waiver.

d. Item 3. Reason for Waiver. The reason for the waiver must be clear and concise. If the waiver for an existing procedure is being revised, the effective date of the original procedure must be included. Include full justification for the waiver; e.g., "To avoid obstructions that would require raising the DA 180 feet."

e. Item 4. Equivalent Level of Safety Provided. Complete this item in all cases with as many points as is germane to the equivalent level of safety. Clearly state the equivalent level of safety which would mitigate the nonstandard condition.

Note 1: The fact that the procedure has existed for a number of years or that the procedure conforms to CFRs is not considered to be sole justification for an equivalent level of safety.

Note 2: Satisfactory flight inspection in and of itself does not constitute an equivalent level of safety.

Note 3: Consultation with the RNGB responsible for the geographic area the procedure is located in is recommended.

f. Item 5. Alternative Actions Deemed Not Feasible. Enter statements in this item to indicate consideration has been given to alternatives and why they were ultimately deemed as not feasible to eliminate the requirements of the waiver condition. Alternatives may include the consideration of new and/or relocated navigational aids, alternative routes/tracks/radials that were considered, removal of obstacles, etc. These entries must result in a description of why the waiver is the only reasonable alternative.

g. Item 6. Coordination with User Organizations. Indicate the FAA offices and other organizations with which this waiver will be coordinated.

h. Item 7. Submitted By. AeroNav Products Manager or his/her designated representative, must sign and date all waiver requests, and forward to AFS-460 for further action. The waiver package (paper/electronic) submitted to AFS-460 must include such technical data (sketches, maps, computations, supporting database information, documentation) as necessary for Flight Standards analysis and understanding of the situation. Packages submitted with insufficient supporting technical data are subject to return to the originating office, or may be held pending receipt of such information.

i. Item 8. AFS Action.

(1) The Flight Procedure Implementation and Oversight Branch, AFS-460, processes all waiver requests and schedules a Procedure Review Board (PRB) to gain consensus on approval/ disapproval. If waiver is approved, the results are forwarded to AFS-400 for endorsement. When necessary, Flight Standards will annotate the Form 8260-1 that approval is contingent upon a successful flight inspection report. Safety Risk Management (SRM) compliance for the Procedure Review Board (PRB) will be implemented as a Quality Management System (QMS) process and documented as part of the online PRB package. Acceptance of the residual risk is documented per PRB Safety Assessment action.

(2) AFS-400 indicates Washington Headquarters action, adds any appropriate comments, and returns the signed waiver package to AFS-460.

(3) AFS-460 retains the original for file, provides a copy of the completed waiver to AeroNav Products, and makes further distribution as necessary.

j. United States Army Waivers. AeroNav Products completes Form 8260-1 per the instructions provided in this order, as supplemented by Order 8260.15. United States Army procedures requiring waivers, for joint civil/military use, are sent to AFS-460 per the provisions in paragraph 8-4-1h.

k. Cancellation of a waiver may be initiated by AeroNav Products (see paragraph 2-12-6) or by AFS-400. The Initiating office must enter a signed statement to that effect, with the effective date and reason for cancellation. AFS-400 will distribute copies to the same organizations that received the approved waiver.

Example:

This waiver is canceled effective February 2, 2002.

Order 8260.3, change 4 permits multiple DME fixes.

(Signature) ___________________

(Title, Office Symbol)__________

Figure 8-4-1. Flight Procedures Standards Waiver

US Department of Transportation
Federal Aviation Administration

FLIGHT PROCEDURE STANDARDS WAIVER

FLIGHT STANDARDS USE ONLY
CONTROL NO.

1. FLIGHT PROCEDURE IDENTIFICATION:

Mohall, ND
Mohall Muni (HBC)
VOR/DME-A

2. WAIVER REQUIRED AND APPLICABLE STANDARD:

To permit a VOR final approach that is more than 30 miles from the facility. FAAO 8260.3B, Volume 1, Para 513B, "Final approaches may be made to airports which are a maximum of 30 miles from the facility."

3. REASON FOR WAIVER (JUSTIFICATION FOR NONSTANDARD TREATMENT):

To have a VOR type approach originating from Minot (MOT) VORTACT to RWY 31 at Mohall Muni. The runway threshold is 31.85 NM from the facility and obstacle clearance must be maintained to this point. Criteria limits the maximum distance from the facility to 30 NM. Minot (MOT) VORTAC is the closest and only useable facility that supports ground-based procedures at Mohall Muni. The VOR/DME-A approach is the only ground-based procedure at Mohall Muni.

4. EQUIVALENT LEVEL OF SAFETY PROVIDED:

1. DME is required.
2. The missed approach point for the procedure is at the 30.0 DME point.
3. The final approach obstacle evaluation area was extended between the MAP and RWY 31 and the entire area was evaluated as primary area.
4. The procedure will be charted "NA at night."

5. ALTERNATIVE ACTIONS DEEMED NOT FEASIBLE:

The installation of an on-airport facility would eliminate a need for a procedure from Minot (MOT) VORTAC, but funding is not available.

6. COORDINATION WITH USER ORGANIZATIONS (SPECIFY):

AJV-353____

7. SUBMITTED BY:

DATE	OFFICE IDENTIFICATION	TITLE	SIGNATURE
	AJV-35	Manager	James P. Doe Digitally signed by James P. Doe DN: cn=James P. Doe, o, ou=AJV-35, email=james.p.doe@faa.gov, c=US Date: 2013.07.08 09:49:47 -05'00'

8. AFS ACTIONS:

☒ **APPROVED** ☐ **DISAPPROVED** ☐ **NOT REQUIRED**

COMMENTS:

Approved based on equivalent level of safety in Block 4.

DATE	ROUTING SYMBOL	SIGNATURE
	AFS-400	John T. Smith Digitally signed by John T. Smith DN: cn=John T. Smith, o=Flight Technologies and Procedures, ou=AFS-400, email=john.t.smith@faa.gov, c=US Date: 2013.07.08 09:50:35 -05'00'

FAA FORM 8260-1 (01/14)

Section 8-5. Radio Fix and Holding Data Record, FAA Form 8260-2

8-5-1. Introduction.

a. General. All civil and military named fixes and holding patterns must be documented on Form 8260-2. Navigation facilities do not require this documentation unless holding is established [see paragraph 8-8-3b(1)]. Form 8260-2 may be initiated by AeroNav Products, military organizations, Air Traffic Facilities, Flight Standards Service, or approved non-FAA procedure developers. Form 8260-2 action may also be initiated by Air Traffic facilities using the Form 8260-2 worksheet [see appendix E] for fixes associated with STAR, SID, and 14 CFR Part 95 route projects. The worksheet is submitted to the applicable Air Traffic Service Area office for coordination with the Regional Airspace and Procedures Team (RAPT) and then forwarded to AeroNav Products for processing. When initiated by military organizations, the forms are coordinated with the controlling FAA Air Traffic facility and then (USAF: See applicable Air Force directives for processing) forwarded to the NFDC. The forms must be distributed in accordance with table 8-3-2. All other initiators must coordinate the establishment, alteration, or change in fix use with the controlling FAA Air Traffic facility. All initiators must coordinate any modification of holding and fix use of any 14 CFR Part 95 route or 14 CFR Part 97 instrument procedure with AeroNav Products or the company maintaining the 14 CFR Part 97 procedure.

b. Entries. All radial/course/bearing entries are magnetic unless otherwise noted. Distances less than one mile must have a zero before the decimal.

c. Storage. All domestic and certain foreign named fixes and holding requirements are entered into NFDC's computer for permanent storage, and are published in Order JO 7350.8, Location Identifiers.

d. Fix Name Change. A fix name change requires a revised Form 8260-2. Annotate in the Remarks section; e.g., "Name Changed From LESLI to WALLS." Fix name changes must be kept to an absolute minimum and must be made only for safety of flight reasons; e.g., similar sounding names in close proximity, name duplication, etc.

Note: A name change for fixes used on procedures contained in the National Flight database (NFD) will require the procedure to be amended to reflect the changed fix name.

(1) Fix name changes associated with instrument flight procedures require that the procedure(s) be amended for the same effective date to ensure chart/database harmonization is not compromised.

(2) When a fix must be moved, refer to Order JO 7400.2, Procedures for Handling Airspace Matters, for guidance on whether the five-letter name may be retained or must be changed.

8-5-2. Preparation of Form 8260-2.

a. Name. Enter the name of the fix. Do *not* enter "INT" or "WP" after the name of the fix. See paragraphs 2-10-8 and 8-5-2g. When an RNAV waypoint is collocated with another type of fix, use the same name for both. When documenting holding for a navigation facility, use the facility name and facility type.

Example:

OKIE

DENVER VORTAC

JACKSON VOR

RHONE OM

AVON NDB

ARUBA LOM

BONLI FM

b. State. Enter the two-letter identifier of the state in which the fix or navigation facility is located. The state is left blank if the country is other than the United States. For offshore fixes at or inside the United States 12-mile territorial limit, name of the nearest state must be used.

c. Country. Enter the two-letter identifier of the country in which the fix or navigation facility is located.

d. ICAO Region Code. Enter the one or two character code of the ICAO region in which the fix or navigation facility is located. In the Continental United States and within the 12 NM territorial limits, the region code will begin with a "K" followed by a numeric character obtained from appendix L. For Alaska "PA" is used and for Hawaii "PH" is used within the 12 NM territorial limit. For all other United States Territories as well as Countries within the United States FIR Boundary and within the 12 NM territorial limit of the Country or Territory and where the United States establishes a fix, the code is as identified in the ICAO Doc. 7910. Outside the 12 NM limit in the Pacific a "P" must be used. Outside the 12 NM limit in the Atlantic and Gulf of Mexico a "K" must be used. Outside the 12 NM limit but within the San Juan FIR boundary "TJ" must be used.

e. Latitude/Longitude. Enter the fix or navigation facility latitude and longitude. Compute the coordinates using the primary means of identifying the fix. Enter to the hundredth of a second. Include the compass point of the latitude and longitude. En route fixes must be calculated using the true courses (to the hundredth of a degree) between the facilities making up the airway/route segment. If the fix is also used in a terminal procedure, then terminal priorities must prevail.

Example:

482921.83N / 1064810.92W

(1) If the fix can be formed in more than one manner, show the facilities used to calculate the coordinates given in the REMARKS section, and record only one set of coordinates on the form.

Example:

OKLAHOMA CITY (FAC1) AND WILL ROGERS (FAC2) USED TO ESTABLISH FIX COORDINATES.

(2) Facilities (NDB, OM/MM/IM and LOM/ LMM/LIM) used as fixes on IAPs are compatible with database referenced navigation systems only when located on the final approach course (FAC) of the NAVAID providing FAC guidance. To ensure compatibility and consistency, use actual coordinates only when the facility resides on the actual FAC. Otherwise, whenever the actual location of the facility is within the commissioned width of the FAC facility; establish marker/locator coordinates where the marker major axis intersects the actual FAC. Where the actual location of the facility is outside the commissioned width of the actual FAC, establish a separate suitable intersection or fix on the actual FAC. In situations where IAPs are established to adjacent parallel runways and the facility is located within the commissioned FAC width for both runways, use the marker/locator on one IAP, and establish a separate fix for the other IAP. Use the actual coordinates of the NDB (LOM/LMM/LIM) for NDB approach procedures. In those instances where the coordinates on the Form 8260-2 reflect the intersection of the marker major axis and the actual FAC, make the following entry in Remarks. "Coordinates reflect location on LOC/AZ centerline abeam the [Facility Name and Type]. Actual facility location is 123456.78N / 0123456.78W."

f. Airspace Docket Number. Enter the docket number when the request is associated with an airspace action. If no docket number, leave blank. A docket number is required only when a compulsory reporting point is established; location/fix makeup is modified, or canceled. A docket number is not required when an existing fix, not a compulsory reporting point, is moved (see paragraph 2-10-5c) or amended due to other reasons.

g. Fix.

(1) Type. List the fix type(s) for the various uses of the fix. If the Form 8260-2 is for a navigation facility, leave blank. Available Fix Types are WP, INT, DME, CNF, and RADAR.

(2) Type of Action. Enter the type of action being taken. The types of action are: Establish, Modify, Cancel, or No Change. This is applicable to Fix only, and *not* to be confused with Holding.

Note 1: Fix Cancellation. When a fix is canceled, a copy of the current (to include all the existing data) Form 8260-2 will be generated. Type of Action will have "Cancel" placed on this line. Complete the Approval line for the individual approving the cancellation.

Note 2: Instrument Procedure Cancellation. Whenever an instrument procedure is canceled, update Fix Use or process a cancellation, as necessary, of Form 8260-2s for fixes associated with the procedure. ATC facility(s) must be coordinated with prior to cancelling a fix. If the fix will be retained for other than instrument procedure use (e.g., ATC use), see paragraph 8-5-2r, for transferring the Office of Responsibility (OPR).

(3) Fix Make-Up Facilities. Enter all navigation facilities used for fix make-up. RADAR and RNAV (except VOR/DME RNAV) fixes, leave blank. En route: Where a crossing radial/bearing establishes a fix along an airway, list the on-course facility as Facility 1, and the off-course facility as Facility 2. Where a fix is established at the intersection of two or more airways, list the source facility farthest from the fix as Facility 1. Terminal: If the fix is an intersection, list the facility providing positive course guidance as Facility 1, and the crossing course facility as Facility 2. If the fix is DME, list the DME source, if other than Facility 1, as Facility 2. For a VOR/DME RNAV waypoint, list the reference facility as Facility 1.

(a) Facility Number. Enter the Fix Make-up Facility Number, beginning with "1." Continue the number list for all navigation facilities used for fix make-up.

(b) Name. Enter the name of the navigation facility.

Example:

KANSAS CITY

TRUTH OR CONSEQUENCES

(c) Ident. Enter the identifier of the navigation facility.

Example:

MCI

TOC

I-OKC

BO

(d) Type. Enter the facility type.

Example:

VORTAC

LOC

VOR

LOC/DME

OM

(e) Class. Enter the Standard Service Volume (SSV) class. VOR, VORTAC, VOR/DME, TACAN, (T, L, H), NDB (HH, H, MH), other facilities leave CLASS blank.

(f) Magnetic Bearing. Enter the magnetic bearing from the navigation facility to the fix. Enter values to the nearest hundredth of a degree.

(g) True Bearing. Enter the true bearing from the navigation facility to the fix. Enter values to the nearest hundredth of a degree.

(h) DME. If the navigation facility provides DME for the fix, enter the DME value. Enter values to the nearest hundredth of a nautical mile (NM).

(i) Distance from Facility.

1. NM. Enter the distance in NM from the navigation facility to the fix. Enter values to the nearest hundredth of a NM.

2. Feet. When the fix being defined is a Final Approach Fix (FAF) or Precise Final Approach Fix (PFAF), enter the distance in feet from the navigation facility to the fix. Enter values to the nearest whole foot.

(j) MRA. See also paragraph 2-10-8. The minimum reception altitude (MRA) is usually based on electronic signal strength determined by flight inspection of the navigation facility. The developer must consider all possible uses of the fix, request flight inspection of the lowest authorized altitude, and ensure procedure design is compatible with any limitations imposed. MRAs assigned must be consistent with signal strength, facility service volume, air traffic requirements, air/ground communications, and airspace structure. For fixes located inside the FAF, establish an MRA 100 feet below the lowest published procedural altitude at the fix. Values are entered in whole feet.

Note: When an MCA is assigned in order to meet flight check signal reception requirements, ensure the applicable facility MRA matches the MCA.

(k) MAA. See also paragraph 2-10-10. The maximum authorized altitude (MAA) is the highest altitude authorized for use of the fix. The developer must consider all possible uses of the fix, request flight inspection of the highest authorized altitude, and ensure procedure design is compatible with any limitations imposed. MAAs assigned must be consistent with signal strength, facility service volume, air traffic requirements, air/ground communications, and airspace structure. Values are entered in whole feet.

(4) ESV. Enter all Expanded Service Volumes (ESV) required for fix make-up. Enter Navigation Facility Ident, Facility Type, Radial or Bearing, Distance, Minimum Altitude, and Maximum Altitude.

(5) Fix Restriction(s). List all fix restrictions, e.g., en route MRA or MCA, military only, fix associated with special procedure, etc.

Example:

MCA V3 5000 NORTHBOUND

MRA V5-47-182 3800

MILITARY ONLY

SPECIAL VOR RWY 5, IOW, IOWA CITY, IA

h. Holding.

(1) Type of Action. Enter the type of action being taken. The types of action are: Establish, Modify, Cancel, or No Change. This is applicable to Holding only, and *not* to be confused with Fix. When no action is being taken, leave blank on originals or enter No Change on revisions. Revise the Form 8260-2 when holding pattern cancellations are necessary. If canceling all holding at the fix or navigation facility, enter Cancel in Type of Action. When more than one holding pattern is established and you wish to cancel an individual holding pattern and retain the other(s), enter Modify in Type of Action, delete the appropriate holding information, and identify the modification in Reason for Revision.

(2) Holding Patterns. Analyze holding patterns incrementally for all altitudes requested by ATC and for all speed categories. Do *not* use less than pattern template number 4. Apply appropriate obstacle clearance to all obstacles within each template area. Some time may be saved by initially evaluating the patterns for the highest speed group. If the same controlling obstruction or minimum holding altitude results, document the obstruction and the associated smaller pattern template number; the evaluation is then complete. If the minimum holding altitudes differ, a more detailed incremental analysis is necessary. When a specific holding pattern is not required, leave blank. Specific holding patterns at ground based navigation facilities that support only RNAV use must be documented [see paragraph 2-5-3f(2)(a)].

(a) Pattern Number. Enter the number for a specific holding pattern beginning with number "1." Continue the number sequence for all specific holding patterns associated with the fix or navigation facility.

(b) Direction. Enter the holding direction based on magnetic inbound course [see figure 8-6-1].

(c) Ident. If holding is based on a navigation facility, enter the identification of the facility providing course guidance. If RNAV, leave IDENT blank.

(d) Type. Enter the type of navigation facility. If RNAV, enter "WP."

(e) RAD/CRS/BRG. Enter the radial/course/bearing in hundredths of a degree magnetic from the facility or waypoint on which holding is based.

(f) CRS Inbound. Enter the course of the inbound leg of the holding pattern in hundredths of a degree magnetic.

(g) Turn (L or R). Enter the direction of turn. Enter “L” for left turn, “R” for right turn.

(h) Leg Length. Either time, DME, or both values may be entered for a specific holding pattern.

1. Time. Enter the time leg length outbound from the fix based on minimum holding altitude.

2. DME. Enter the DME leg length outbound from the fix based on minimum holding altitude. Enter the DME value to the whole NM.

(i) Holding Altitudes. Authorized altitudes must be no lower than the lowest altitude requested by ATC. Evaluate up to the maximum altitude operationally requested.

1. Minimum. Enter the minimum holding altitude authorized for the holding pattern. Value is entered in whole feet.

2. Maximum. Enter the maximum holding altitude authorized for the holding pattern. Value is entered in whole feet.

(j) Templates. See Order 7130.3 for the holding pattern template information.

1. Minimum. Enter the minimum holding pattern template used for controlling obstruction evaluation based on the minimum holding altitude.

2. Maximum. Enter the maximum holding pattern template used for controlling obstruction evaluation based on the maximum holding altitude.

(3) Controlling Obstructions.

(a) Pattern Number. Enter the Holding Pattern number to which the controlling obstruction is applicable. When documenting the controlling obstruction for unplanned holding, enter “UPN.” When documenting the controlling obstruction for a Climb-in-Hold evaluation on a holding pattern already listed, make a separate entry, repeating the Holding Pattern number.

(b) Airspeed. Enter the maximum holding airspeed used based on the minimum holding altitude for the pattern (see Order 7130.3, Holding Pattern Criteria, table 1).

Example:
230

(c) Obstruction. Enter the description of the controlling obstruction. Enter the obstruction identifier, if available, in parenthesis.

Example:

TOWER (KORD0045)

(d) Coordinates. Enter the latitude and longitude, with compass points, of the obstruction to the nearest hundredth of a second.

Example:

573129.97N/0701658.77W

(e) Elevation. Enter the MSL elevation of the obstruction to the nearest foot.

(f) Accuracy Code. Enter the applicable accuracy code (if available) of the controlling obstruction.

(4) Precipitous Terrain Additions. List by Pattern Number any required precipitous terrain addition used with the required obstacle clearance to determine the minimum holding altitude.

(a) Pat. List the Holding Pattern Number.

(b) Addition. List the precipitous terrain addition to the whole foot.

(5) Reason for Nonstandard Holding. When holding with left turns, identify the Holding Pattern number and the reason. If standard, leave blank.

Example:

PAT 1 TERRAIN

PAT 3 TRAFFIC DECONFLICTION

(6) Holding Restriction(s).

(a) Unplanned holding at en route fixes may be expected on airway or route radials, courses, or bearings. If a navigation facility, unplanned holding could be on any radial or bearing. Holding approval for en route fixes indicates approval of unplanned holding.

(b) En route fixes which also serve as missed approach clearance limits must permit holding and en route flight.

(c) When unplanned holding is not recommended, holding should be restricted. When planned or unplanned holding is restricted, add an appropriate note in the Fix Restrictions section.

Example:

HOLDING LIMITED TO ESTABLISHED PATTERN(S)

UNPLANNED HOLDING NA 090 CW 220

UNPLANNED HOLDING NA ON R-120 CW R-272

UNPLANNED HOLDING AUTHORIZED AT OR ABOVE 5000

PRIOR COORDINATION REQUIRED WITH CONTROLLING AGENCY FOR HOLDING OVER R-5503A/B

(7) Procedures Requiring Climb-In-Hold. Evaluate the climb-in-hold as appropriate, in accordance with Order 7130.3, paragraph 2-28. Enter all procedures that require a climb-in-hold evaluation for a listed holding pattern. Enter the Holding Pattern Number, Procedure Title, Airport Ident, City, and State.

Note: If other than 310 KIAS climb-in-hold speed is used (i.e., 200/230 KIAS used for holding patterns restricted to 175 KIAS), the procedure must be annotated with the maximum airspeed allowed to conduct a climb-in-holding [see paragraph 8-6-7f].

Example:

PAT 1, VOR RWY 19, MCI, KANSAS CITY, MO

i. Remarks. The foregoing instructions contain several uses for this section. Additional uses are as follows:

(1) Precipitous Terrain. Enter a remark stating precipitous terrain evaluation completed.

Example:

PRECIPITOUS TERRAIN EVALUATION COMPLETED.

(2) When holding is over a NAVAID, document the assigned magnetic variation of the NAVAID.

(3) Other Remarks. Enter remarks necessary to clarify fix make-up, holding patterns, etc.

j. Fix Use. List the uses of the fix. List the Use Type, Use Title, Fix Make-Up (if applicable), Pattern (if applicable), Airport Ident (if applicable), City, and State (if applicable). List both procedure and non-procedure fix use in Use Type and Use Title. When a specific facility or holding pattern needs to be charted for a fix use, enter the Facility Number(s) in Fix Make-Up and/or Pattern Number(s) in Pattern.

(1) Use Type. Use Types are:

(a) DP - Used for SIDs and ODPs.

(b) En Route - Used for airways, jet routes, Q routes, T routes, etc.

(c) IAP - Used for standard and special approach procedures.

(d) Other - Used for non-procedure fix uses, e.g., ATC Coordination Fix, Pitch/Catch Point, Restricted Area Entry/Exit Point, Sub-Route, etc.

(e) STAR - Used for standard terminal arrival.

(2) Whenever the Fix Use section is changed (i.e., addition, deletion, or modification), this is considered to be a revision and the revision number must be changed.

k. Required Charting. List the flight publication products the fix is to be charted on. The publication products are SECTIONAL, VFR TERMINAL AREA, VFR FLYWAY PLANNING, HELICOPTER ROUTE, DP, STAR, IAP, MILITARY DP, MILITARY STAR, MILITARY IAP, SPECIAL IAP, AREA, CONTROLLER, EN ROUTE LOW, and EN ROUTE HIGH, IFR GOM VERTICAL FLIGHT.

Example:

DP, IAP, CONTROLLER, EN ROUTE LOW

Note: If fix is charted on an En Route Low or En Route High, it will automatically be charted on the Controller chart.

l. Compulsory Reporting Point. If the fix is a compulsory reporting point, enter the airspace structure(s) applicable to the reporting point, e.g., Low, High, Low/High. If the fix is not a compulsory reporting point, enter No. [see also paragraph 8-5-2a.]

m. Record Revision Number. Enter the revision number. When the Form 8260-2 is an original, enter “Orig” [See paragraph 8-5-2j].

n. Date of Revision. Enter the effective date of the new/revised holding pattern and/or fix.

Note: If the fix/holding pattern serves only a Special instrument procedure, this date must be the same as the effective date established for the procedure [see paragraph 8-8-g].

o. Reason for Revision. List the reason(s) for the revision. Make “concurrent with” entries if needed.

Example:

ADDED FACILITY 3 TO FIX MAKE-UP RAISED PATTERN 4 MINIMUM HOLDING ALTITUDE FROM 3000 FT TO 4000 FT CONCURRENT WITH JACKSON HOLE, WY, VOR/DME RWY 36, AMDT 3

p. ATC Coordination. Enter the date, air traffic facility Ident and type, and name of the ATC individual that coordinated the fix request.

q. Initiated By. For AeroNav Products or ATC developed fixes, leave blank. For all other developed fixes, enter the date, organization/company, and name of the individual initiating the fix.

r. Office of Primary Responsibility (OPR). Enter the name and office symbol of the office that is the focal point for any changes/modifications to this fix and/or holding pattern(s). See appendix D for guidance when submitting changes/modifications to the OPR. The OPR is subject to change based on changes that may occur regarding "fix use." For example, if the fix were used by a non-FAA service provider or ATC and it will now be used for an instrument flight procedure developed by the FAA; the OPR will be transferred to AeroNav Products [see paragraphs 2-10-4a(5) and (6)].

s. Approved By. Enter the date, office, name, and signature of the approving authority. AeroNav Products is the approval authority for fixes required by FAA developed instrument flight procedures and/or airways. AFS-460 is the approval authority for fixes associated with "Special" instrument flight procedures *not* developed by the FAA. Companies approved to develop 14 CFR Part 97 instrument procedures under an Other Transactional Agreement (OTA) approved by the FAA have approval authority for those fixes used solely for procedures they have developed. The DoD may sign and approve fixes that are for DoD operations and have no impact on FAA developed instrument procedures and/or airways. The applicable Service Area Operations Support Group, Flight Procedures Team (OSG-FPT) is the approval authority for fixes created solely for ATC use.

t. Distribution.

(1) Distribute the approved Form 8260-2s for instrument procedure fixes, including military fixes as defined in table 8-3-2.

(2) Enter the office symbol, abbreviation, or facility Ident. Enter each ARTCC, ATC Facility, or other if sent to more than one of that type.

(3) For United States Army fixes, distribute Form 8260-2s in accordance with Order 8260.15.

(4) Send the Form 8260-2s (Electronic submission preferred) on Specials to the NFDC when notified that the Special has been approved by AFS-400.

Section 8-6. Completion of FAA Forms 8260-3/5

8-6-1. General. This section contains information applicable to the completion of Forms 8260-3 and 8260-5. Certain information contained herein is also applicable to Forms 8260-4, 8260-7A, and 8260-10, which is covered in the succeeding section. Guidance is referenced to each separate area of the forms.

8-6-2. Terminal Routes. The information described in the Terminal Route section along with data entered on line 1 or 2 is used to develop the planview of the instrument approach chart. For RNAV (GPS and RNP) procedures, document all segments of the procedure, including the final and missed approach segments.

a. From-To Columns. List routes from fix to fix. Establish terminal routes that require a course reversal direct to the fix or facility from which the course reversal is authorized. Signify dual-use fixes (e.g., where hold-in-lieu-of-PT is established at the FAF or IF) as (FAF/IAF) or (IF/IAF).

(1) Enter IAF designations “(IAF)” in the “From” column after each fix satisfying the requirements of the parenthetical initial approach fix [see paragraph 8-2-5j].

(2) Enter intermediate fix designator “(IF)” in the “From” column after the fix satisfying the requirements of the parenthetical intermediate fix [see paragraph 8-2-5i(4)].

(3) Enter NoPT in the “To” column for initial segments that permit elimination of the procedure turn. Designate the intermediate segment NoPT only if necessary to clarify the procedure. Do *not* designate as NoPT a segment after a course reversal fix [see paragraph 8-2-5g(2)].

(4) Enter CW for clockwise or CCW for counter-clockwise in the “From” column for arc segments. When entered, this information must precede the “(IAF)” as applicable. Enter the name of the fix to which an arc segment connects in the “To” column.

(5) Describe feeder or initial routes based on dogleg segments as fix-to-fix. For a dogleg to a fix on the extended final approach course (FAC), enter the heading and FAC in the course/distance column [see paragraph 8-6-2b(3)]. Specify each segment on a separate line. Establish common initial segment altitudes. Where not possible, establish separate procedures. The DR initial is one segment.

(6) For RNAV (GPS and RNP) IAPs, and ILS/LOC procedures containing RNAV segments, document:

(a) The RNAV leg type, waypoint type [fly-by (FB) or fly-over (FO)], and waypoint description code for all approach as well as missed approach segments, in the “TO” column, as appropriate; e.g., UNAVY (NOPT) (TF) (FB) (40E) (41E) (43A); ECCHO (DF) (FO) (40E) (42M) [see Note 1].

(b) The RNP value for each segment for RNAV (RNP) designated instrument procedures in the “TO” column; e.g., (RNP 1.00). Use a leading zero for RNP values less than 1.00; e.g., (RNP 0.50) [see paragraph 4-7-10i].

(c) The landing threshold point (LTP), OR for offset procedures, the fictitious threshold point (FTP) in the “TO” column; e.g., RW18R for the LTP or a CNF for the FTP. Normally, the LTP/FTP will be designated as a Fly-Over waypoint; e.g., RW36R (MAP) (TF) (FO) or (GZWTY) (MAP) (TF) (FO). However, when RNP is required for the missed approach course and the RNP necessary is less than 1.0 [see Order 8260.58, Volume 5, chapter 3], the LTP/FTP must be coded as a Fly-By waypoint; e.g., RW08R (MAP) (TF) (FB) or (FTYWZ) (MAP) (TF) (FB).

(d) The waypoint description codes in the “From” column must be listed as appropriate; e.g., HABRA (43B); GIPNE (42S); RW32 (MAP) (40G) (43M) [see Note 1].

(e) The missed approach holding waypoint (clearance limit) as a fly-over (FO) waypoint. However, the missed approach holding waypoint will not be charted as a fly-over waypoint in order to avoid confusion when the fix is used for other purposes and treated as a fly-by waypoint.

Note 1: For agencies providing a complete ARINC packet record on Form 8260-10, RNAV leg type, and waypoint description codes are not required in the Terminal Routes blocks.

Note 2: Waypoint description codes are defined by specifying from one and up to four column number(s) and Alpha character(s) as defined in appendix N. There may be more than one waypoint description code associated with a fix, based on different fix usage during the procedure.

b. Course/Distance Column. Specify the course and distance for each route segment, except for RNAV DF legs. For RNAV (GPS) final approach stepdown segments, use the final approach course as computed from the PFAF to LTP/FTP for the stepdown segment(s) course entry. Enter the actual magnetic course to the hundredth of a degree, and distance to the hundredth of a mile. AeroNav Products or other charting authority will round for publication.

(1) Where course guidance is apparent (fix to facility, facility to a fix, or facility to facility): 090.17/10.03.

(2) Where course guidance must be specified (fix-to-fix): Specify NDB bearings “FROM” the facility.

090.44/7.12 (I-ABC).
090.11/8.20 (ABC R-270).
090.34/10.56 (XXX Brg 090).
251.33/7.89 (M-AVE).

(3) Where there is a DR route defined from fix to fix via two segments (dogleg), and there is no altitude change between segments, the course, distance, and guidance must be identified for each segment in one single entry. Establish a CNF at the intersection of the heading

leg and the next segment. Document the CNF on Form 8260-2 and provide charting instructions in the associated Additional Flight Data section [see paragraph 8-6-8t].

130.49/7.10 (ABC R-130) & 185.01/4.33 (XYZ R-185).
005.21/3.60 (Hdg) & 296.36/4.82 (I-MSP).
130.28/4.12 (Hdg) & 180.18/7.45 (ABC R-360).

(4) Enter the DME arc used in an arc segment: 14.00 DME Arc.

(5) When a lead radial or bearing is required, enter the data in parentheses immediately below the course and distance data in the following manner:

(ABC LR-300)
(ABC LBRG-300)

(6) For RF leg types, document the radius, direction (clockwise or counter-clockwise) and the CNF point used to define this arc segment followed by the arc distance in the following manner:

(4.72 NM RADIUS CW (XDYUQ))/2.68

Note: The arc radius, direction, and CNF used to make up the RF leg are shown in parenthesis will not be published on the chart. This information is provided for database use only. Only the RF track distance and altitude will be published on an RF turn.

c. ALT Column. Enter the altitude authorized for the route, except for an RNAV (GPS or RNP) missed approach segment from the MAP to a turn fix.

(1) When the routing requires a course reversal, the altitude authorized must not be lower than the course reversal altitude.

(2) The altitude authorized for any terminal route must be no lower than the altitude authorized for succeeding segments. Where more than one segment joins at a common fix, a common altitude should be selected.

(3) Where a localizer segment fix minimum altitude differs from that required for ILS, enter the ILS minimum altitude. Directly below this value, enter the LOC minimum altitude followed by the same attention symbol used in paragraph 8-6-3d(1) so that both plan and profile views are identically annotated.

(4) When mandatory or maximum altitudes are an operational necessity, document the limitations in Additional Flight Data [see paragraph 8-6-8r].

8-6-3. Lines 1 through 8.

a. Line 1.

(1) Enter procedure turn (PT) side of course as left or right of the outbound course; i.e., the large side of the template. Enter the outbound course to the hundredths of a degree, procedure turn altitude, procedure turn distance, and name of fix from which the procedure turn is authorized as follows:

PT L side of CRS 018.13 outbound, 2300 within 10 NM. of MELIS INT (IAF).

(2) When an obstacle in the PT entry zone precludes early descent to PT altitude, enter the altitude restriction in Additional Flight Data as "Chart (altitude) prior to (PT Fix) in profile."

(3) Leave line 1 blank when there is no PT, or where hold-in-lieu-of-PT or a teardrop course reversal maneuver is established.

b. Line 2.

(1) Where a SIAP requires a teardrop course reversal maneuver, enter the data in accordance with the following examples:

<u>Collocated facility</u>:

Teardrop R-160 outbound, R-180 inbound, 4300 within 15 NM of ABC VORTAC (IAF).

<u>Non-collocated facility</u>:

Teardrop R-160 (ABC VORTAC) (IAF) outbound to NIXON/19.00 DME, 355.00 (I-XYZ) inbound, 3000 to KENNY OM/INT.

<u>Non-collocated facility, Altitude at Turn Point or High Altitude Teardrop</u>:

Teardrop R-220 (ABC VORTAC) (IAF) outbound to NIXON/19.00 DME, 5000, 257.28 (I-XYZ) inbound, 4500 to KENNY OM/INT.

<u>Non-collocated NAVAID – IAF after NAVAID – Altitude at Turn Point or High Altitude Teardrop - IAF after NAVAID</u>:

Teardrop R-220 (ABC VORTAC) START/7.00 DME (IAF) outbound to NIXON/19.00 DME, 5000, 257.28 (I-XYZ) inbound, 4500 to KENNY OM/INT.

<u>Non-collocated NAVAID – IAF at NAVAID – Altitude at Turn Point – Stepdown Fix(es) or High Altitude Teardrop - IAF at NAVAID - Stepdown Fix(es) (Example with three Stepdown Fixes in outbound segment of the Teardrop)</u>**:**

Teardrop R-220 (ABC VORTAC) (IAF) outbound, MANNY INT 10000 MOOEE INT 9200, JACCK INT 7500 feet to PEEPP INT 6800, R-257 (ABC VORTAC) inbound, 6000 to BOYZS INT.

<u>Non-collocated NAVAID – IAF after NAVAID – Altitude at Turn Point – Stepdown Fix(es) or High Altitude Teardrop - IAF after NAVAID - Stepdown Fix(es) (Example with three Stepdown Fixes in outbound segment of the Teardrop)</u>**:**

Teardrop R-220 (ABC VORTAC) CARRS/7.00 DME (IAF) outbound, MANNY INT 10000, MOOEE INT 9200, JACCK INT 7500 to PEEPP INT 6800, R-257 (ABC VORTAC) inbound, 6000 to BOYZS INT.

(2) Where a SIAP requires a holding pattern in-lieu-of-PT [see Order 8260.3, Volume 1, paragraph 234e], establish the direction of holding based on the inbound course as shown in figure 8-6-1. Enter RNAV leg type and waypoint description code, as appropriate for procedure type. For agencies providing a complete ARINC packet record on Form 8260-10, RNAV leg type, and waypoint description code entries are not required. Enter holding data in accordance with the following examples:

(a) Hold SE OMEGA LOM, RT, 313.09 inbound, 1600 in lieu of PT (IAF).

(b) Hold W FIXXR, LT, 103.28 inbound, 3000 in lieu of PT (IAF) (HF) (40E) (43C).

Figure 8-6-1. Holding Pattern Directions

Magnetic Course (Inbound)	Magnetic Course (Based on Inbound Course)
338-022	S
023-067	SW
068-112	W
113-157	NW
158-202	N
203-247	NE
248-292	E
293-337	SE

(3) On procedures that do not authorize a PT or a hold-in-lieu of PT at the PFAF, enter the fix/facility at which the profile view is to start.

(a) For procedures with a single intermediate fix (IF), the profile must include the IF. If required for clarity, the profile view may be extended to depict any fix outside the IF provided the intermediate fix and preceding fixes are located on the final approach course extended.

Profile starts at STING

(b) For procedures with multiple intermediate fixes (applicable only to RNAV (RNP) AR procedures), the profile starts at the first common fix encountered inbound between the IF and PFAF; otherwise, the profile starts at the PFAF. In addition, use the following note: “Chart profile note: See Planview for Multiple IF locations.”

c. Line 3.

(1) Enter the final approach course (FAC) on all procedures. Enter the exact electronic course to a hundredth of a degree. AeroNav Products will chart to the nearest whole radial/course for publication. The FAC is determined as follows:

(a) ILS, LOC, SDF, and LDA procedures - enter the official course alignment based on antenna location and orientation.

(b) RNAV procedures - enter the course established by AeroNav Products computation. For RNAV procedures that contain RF turns in the final segment, place an asterisk here. An asterisk will then be placed prior to the fix names that make up the final approach segment) in the Terminal Routes "To" block.

(c) NDB, VOR, and TACAN procedures - enter the computed magnetic radial/course/bearing or reciprocal unless flight inspection establishes otherwise [see paragraph 8-6-8i]. If other than the computed value, enter both values in the Remarks section of the Form 8260-9 [see paragraph 8-7-1c(8)].

(2) Enter FAF (when applicable). Enter a FAF for all procedures, except those procedures without a FAF that use on-airport facilities, or ILS procedures that do not authorize LOC/AZ-only or circling.

Note: For ILS procedures that do not contain localizer minima leave the "FAF" portion blank [see paragraph 8-6-3f(3)].

(a) For RNAV procedures, enter the named PFAF/FAF.

Note: For RNP, LPV and LNAV/VNAV procedures that do not contain LNAV minima, leave the "FAF" portion blank [see paragraph 8-6-3f(3)].

(b) Vertically guided procedures will normally have the PFAF collocated or within one NM of the FAF; however, when the PFAF is 1 NM or greater from the FAF, a separate named PFAF is required. Document this following the FAF name as follows:

FAF: SKIPI LOM PFAF: NACON

Note: The PFAF distance to the FAF will be calculated and charted.

(3) Enter the distance from the FAF to the MAP in miles and hundredths. For all non-RNAV procedures, leave blank when the time/distance table is not required for determination of the MAP, such as when the MAP is a facility or fix. All RNAV procedures must have the FAF to MAP distance specified (a time/distance table will not be published on RNAV procedures).

Note: It may be necessary to define MAP with a time/distance table when criteria do not permit use of DME to define the MAP (e.g., DME satisfactory to define FAF but MAP signal source exceeds 23 degrees angular divergence).

(4) Enter the distance from the FAF to the LTP/FTP if straight-in minimums are authorized, to the nearest hundredth of a mile. Leave blank for circling-only and on-airport

No-FAF SIAPs, Copter point-in-space approaches, and vertically guided procedures that do not incorporate a non-vertically guided procedure FAF; e.g., ILS without a LOC procedure or RNAV procedures that do not have LNAV minimums.

d. Line 4. Enter fixes and minimum altitudes that are to be depicted on the profile view. On procedures that do not authorize a procedure turn or holding pattern, the facility or fix designated as the start of the profile in line 2 must be the first fix/facility entered on line 4 [see paragraph 8-2-5i(3)]. Where radar vectors are required for procedure entry, ensure the relevant minimum altitude shown is no lower than the MVA at the IF.

(1) Fix altitudes established on ILS for LOC-only use, or RNAV (GPS) for LNAV only use; annotate it for LOC or LNAV use as follows:

MIN ALT: CAROL 1600*
*LOC only

MIN ALT: MIZZU 1260*
*LNAV only

Note 1: This notation is not used when the nonprecision FAF altitude is the same as GS intercept altitude.

Note 2: Do not establish altitude restrictions at fixes located between the PFAF and RWT on vertically guided approach procedures unless they are applicable to a non-vertically guided procedure published on the same approach chart (example: ILS chart with a localizer procedure that requires publication of a stepdown fix) and the fix altitude is annotated for use on the non-vertically guided procedure only.

Note 3: If a stepdown fix is required on a chart with LNAV and LP minimums, the stepdown fix applies to both LNAV and LP. Do not establish a stepdown fix applicable only to LNAV or only to LP.

(2) Enter all fixes and minimum altitudes after completion of procedure turn, including any fixes associated with the procedure turn or intermediate segment, and including the FAF and any final stepdown fixes. Enter the IAF and minimum altitude when required for obstruction clearance in the PT entry zone [see paragraph 8-6-3b].

Note: Do not enter a fix on line 4 that is positioned on the profile prior to the procedure turn or holding point unless the fix is required for obstacle clearance or noise abatement after completion of the PT.

(3) Make no entry on line 4 for on-airport facilities with a single set of minimums and no stepdown fix, except as noted in paragraph 8-6-3d(2), since the minimum altitude over the facility is determined by the MDA.

(4) For procedures with a FAF, an entry on line 4 is required for the FAF and the stepdown fix(es), if established.

(5) For procedures with a final segment stepdown fix, when a secondary remote altimeter setting is available and an MDA adjustment is necessary, the stepdown fix must also be annotated to reflect the necessary altitude adjustment as follows:

MIN ALT: PAULA 1420*
*1540 when using (location) altimeter setting.

e. Line 5. *(Form 8260-3)*. Enter distance in miles and hundredths to the LTP/FTP from the outer marker (OM) and middle marker (MM).

(1) On vertically guided procedures (i.e., RNAV, ILS, or GLS) that do not contain nonprecision minima (i.e., LNAV, LOC, or Azimuth Only), place the PFAF to threshold distance in the block marked "OM."

(2) On SA Category I procedures, enter the distance in feet to the threshold from the 150-foot HAT point.

(3) On Category II and III procedures, enter distance in feet to the threshold from the inner marker (IM) and 100-foot HAT points (as applicable).

(4) On Categories I, II, III procedures, enter distance in feet from the threshold to a point abeam the glide slope (GS) antenna (for ILS). Leave blank for RNAV procedures or if not applicable.

f. Line 6. *(Form 8260-3)*. Applicable to vertically guided procedures only.

(1) Enter minimum Glide Slope/Glidepath (GS/GP) intercept altitude, rounded to the next higher 100-foot increment. The GS/GP intercept point is considered to be the PFAF for vertically guided procedures.

(2) For RNAV (RNP) procedures that contain RF turn fixes located between the PFAF and LTP/FTP, enter the computed glidepath altitude at each fix.

Example:
NUDCI 1716

(3) If a fix or facility is located on the final approach course between the precise FAF (GS/GP intercept) and the nonprecision FAF (no OM/LOM installed), enter the name of the fix or facility and the GS/GP elevation in feet. Where nonprecision minimums are not published, establish a fix, and associated GS/GP altitude.

(4) Enter the altitude of the GS/GP in feet at the OM/PFAF. For procedures where the OM exists but no longer serves as the LOC FAF (moved to coincide with PFAF), an ILS "gross error" check altitude will still be depicted at the OM. When this situation occurs, in the "Additional Flight Data" block, enter "Chart OM in half-tone."

(5) Enter the altitude of the GS in feet at the MM, and the IM for ILS procedures only. If not installed, leave blank.

Note: GS/GP altitude computations contained in Order 8260.3 Volume 3 include earth curvature (EC) values.

g. Line 7. (Form 8260-3).

(1) Enter the computed VNAV angle, LPV angle, or the commissioned ILS angle (as appropriate) to the nearest hundredth of a degree. This angle must be used to make calculations entered in lines 5, 6, and 7.

(2) Enter the threshold crossing height (TCH) to the nearest tenth (.1) of a foot. When a threshold is displaced, enter the TCH over the displaced threshold, but do not identify it as such. If the TCH over the displaced threshold is below the minimum value specified in Order 8260.3 Volume 3, table 2-3, enter the TCH values at the displaced threshold and runway end as shown in the following example:

TCH 32.4 at displaced THLD; 67 at runway end.

Note: Flight inspection, as well as instrument databases, must be based upon the same GP orientation elevation. Use AIRNAV as the official data source.

(3) For RNAV procedures, state whether the 34:1 obstacle assessment [see Order 8260.3 Volume 1, paragraph 3.3.2c(2)] is clear or not; e.g., 34:1 is clear or 34:1 is not clear. If the 34:1 surface is not clear, those obstacles will be identified on Form 8260-9.

h. Line 8.

(1) Enter the identification and type of facility from which the MSA is computed. On ILS and LOC procedures, an NDB or VOR facility located on the localizer course must be used to provide MSA information when available. If an omni-directional NAVAID is not available on the LOC course, the primary omni-directional NAVAID serving that area must be used. For RNAV, enter the named MAP waypoint, or, if at threshold, the appropriate identifier; e.g., RW16 or RW16R. For VOR/DME RNAV, enter the named RWY WP for straight in, or named APT WP for circling. Leave blank for procedures that contain a Terminal Arrival Area (TAA).

(2) Enter the MSA information clockwise by sectors, if used. Do *not* establish sectors for MSAs on RNAV procedures. Sectors are referenced to bearings from the primary omni-directional NAVAID as follows:

MSA from OAK VORTAC 360-170
4900, 170-360 3700.

(3) Provide a single MSA only when the altitude difference between all sectors does not exceed 300 feet as follows:

MSA from XYZ VORTAC 7700.
MSA from RW16R 7700.
MSA from WGNUT 7700.

(4) Enter the radius of the sector if more than 25 NM; and when the facility-to-airport distance exceeds 25 NM, use a radius of up to 30 NM maximum to include the airport landing surfaces as follows:

MSA from ABC VORTAC 060-150 2300,
150-240 3000, 240-330 3600, 330-060 4200 (28 NM).

(5) Where more than one procedure for an airport is established on the same facility, the MSA sector divisions must be identical for each procedure.

(6) Amend procedures anytime the MSA value does not provide the minimum ROC.

8-6-4. Takeoff and Alternate Minimums.

a. Takeoff Minimums. Takeoff minimums will be documented on Form 8260-15A in accordance with Order 8260.46.

b. Alternate Minimums. See Order 8260.3, Volume 1. Additionally:

(1) Chapter 2 of this order defines facility monitoring categories (1, 2, 3, and 4) and utilization of these categories. Alternate minimums must not be denied on precision SIAPs if the OM or authorized substitute does not have a remote status indicator. This is because the ILS is monitored, and the GS/GP provides intercept and descent guidance. However, this does not apply to nonprecision SIAPs or the LOC portion of an ILS SIAP; i.e., deny alternate minimums on a nonprecision SIAP if the facility is not monitored.

(2) Enter alternate minimums in the space provided. If sufficient space is not available in the Alternate Minimums block for all necessary data, the entry may be continued in the Notes section or placed entirely on Form 8260-10. If continued in the Notes section, separate the data from the landing minima notes by placing the data to the right side of the block. When necessary to use Form 8260-10, state: "See FAA Form 8260-10."

(3) Alternate minimums <u>are</u> authorized on RNAV (GPS) and RNAV (RNP) SIAPs. However, procedures that only contain LPV minimums cannot be used for determining an Alternate; therefore, an "X" must be placed in the "NA" box.

(4) When alternate minimums are standard, enter the word "Standard"; when not authorized, place an "X" in the "NA" box. When part-time, or higher than standard for some categories, enter "Standard #" and annotate the appropriate condition by separate standard Note:

NA when control tower closed.
CAT D 1000-3
NA WHEN LOCAL WEATHER NOT AVAILABLE [When applying paragraph 8-6-6f(5)]

(5) When alternate minimums are non-standard; e.g., higher than standard for each category available for certain users, etc., do *not* place an X in the NA box. Enter # next to the "NA" box and annotate the appropriate condition by separate standard Note:

NA except standard for operators with approved weather reporting service.
CAT A, B 900-2, CAT C 900-2 1/2, CAT D 1000-3

(6) Make separate entries for the complete ILS and for the LOC on the Form 8260-3. Place reference symbols appropriately; e.g., (ILS: # or LOC: Standard @). Use standard Note:

#CAT A, B, C 800-2, CAT D 800-2 ½
@ CAT D 800-2 ½

8-6-5. Minimums.

a. General. Enter minimums in boxes provided. Enter straight-in minimums starting with the lowest HAT as the first (top) line of minima followed by the next lowest HAT as the second line of minima and so forth in sequential order followed by circling minimums. A maximum of six lines (maximum five lines where dual minimums are published) of any combination of authorized minima may be published on a single chart. Enter "NA" in the applicable box(s) when a specific aircraft category(s) is not authorized, except as noted in paragraph 8-6-5f. Make no entry in the minima blocks when minimums are not authorized for *all* aircraft categories. Do *not* deny or cancel straight-in minimums in order to circumvent grant agreements that have been established under airport development programs. If criteria do not permit straight-in minimums, publish circling minimums only.

b. When a ten-mile procedure turn (or greater) is established, Category A, B, C and D minimums may be authorized.

c. When a five-mile procedure turn is established, only Category A minimums are authorized; enter NA in the VIS column for Category B, C, and D aircraft. For Copter procedures, delete the letter "A" and insert the word "Copter," and leave B, C, and D blank.

d. When specific minimums are not authorized, enter NA in the VIS column for the appropriate Category.

e. See Order 8260.3, Volume 1, chapter 3, for guidance to use when determining what categories to evaluate for and chart.

f. Make no entry in the Category E boxes, except where a valid military requirement exists.

g. Types of Minimums. The types of minimums for non-RNAV instrument procedures must be entered as "S- (ILS; LOC; LDA; LDA/GS; as applicable) (Runway No.)" for straight-in minimums, "Circling" for circling minimums, and "Sidestep (Runway No.)" for sidestep minimums [see paragraph 4-1-6h].

(1) For Copter procedures, on Forms 8260-3/4/5/7A, enter "H-. For Copter SIAPs straight-in to a runway," enter "H-(runway designation)." For all other Copter SIAPs, enter "H-(numerical identification of the final approach course)." For COPTER RNAV (GPS) procedures, apply paragraph 8-6-5g(2).

(2) For RNAV (GPS) procedures, establish minimums for LPV (or LP where LPV is not possible), LNAV/VNAV, and LNAV and Circling, as applicable; however, LP must never be published on the same chart as LPV or LNAV/VNAV. Where LPV minimums are not published, publish LP minimums if they are at least 20 feet lower than LNAV minimums. Label minimums for current stand-alone GPS approaches transferred to the new RNAV (GPS) plate, and the new non-vertically guided RNAV procedures, as "LNAV." Insert the term "DA" after the labels LPV and LNAV/VNAV. Insert the term "MDA" after the labels LP, and LNAV. "Circling" for circling minimums, and "Sidestep (Runway No.)" for sidestep minimums [see paragraph 4-1-6h].

(3) For RNAV (RNP) procedures, use the minima blocks normally reserved for dual minimums and enter "Authorization Required" in the title line. Establish minimums for RNP 0.30 as specified in Order 8260.58, Volume 5. A maximum of four lines of minima may be established. The lowest DA will be the top (first) line of minima followed by the next lowest DA (second line) and so on, in sequential order. There could be cases where an RNP value appears out of sequence; e.g., "RNP 0.15 DA" (first line; climb gradient allows for lower DA), "RNP 0.30 DA" (second line; lesser climb gradient), "RNP 0.15 DA" (third line; lesser climb gradient), and "RNP 0.30 DA" (fourth line, no climb gradient). Nonprecision (e.g., Circling and sidestep minimums) are not published on RNAV (RNP) procedures.

Note 1: There may be situations where an RNP 0.3 cannot be achieved due to Special Use Airspace/terrain constraints and only a lesser value can be published. This is permitted along with the reason this was necessary to document in the remarks section of the Form 8260-9.

Note 2: Only the largest RNP value will be coded into the ARINC 424 database.

(4) For GLS procedures, establish only one line of minimums. Insert the term "DA" after GLS.

h. DA/MDA. Enter the Decision Altitude (DA) or MDA authorized by criteria as an MSL value in each of the appropriate DA/MDA boxes by category of aircraft.

i. VIS. Enter the visibilities authorized by Order 8260.3, Volume 1, chapter 3. RVR authorized on runways to which straight-in minimums are published must be entered in feet; e.g., 4000; 2400; 1800, etc. Procedures located in a foreign country where Meters is the value used for visibility, enter an "m" following the number; e.g., 1200m; 800m; 550m; etc.

(1) See Order 8400.13, Procedures for the Evaluation and Approval of Facilities for Special Authorization Category I Operations and Approval of All Category II and III Operations. When it has been determined that a procedure qualifies for 1800 RVR under the guidelines in this Order, place in the Notes section of the 8260-series form: "Chart Note: RVR 1800 authorized with use of FD or AP or HUD to DA." This chart note must be referenced to the straight in minima it applies to. If the note applies to the entire line of minima, the attention symbol must be placed following the minima type (i.e., S-ILS 19L*). If the note applies only to certain aircraft categories, the attention symbol must be associated with the numerical DH/MDA value (i.e., 502*) for those categories.

(2) See paragraph 4-1-5 of this order for guidance on using RVR on adjacent runways.

(3) When Order 8260.3, Volume 1, paragraphs 3.3.2c and 3.3.3c requires visibility to be limited to ¾ mile or one mile because of 34:1 or 20:1 visual surface penetrations, a note is required to prevent helicopters from applying 14 CFR Part 97.3 that states: "The required visibility minimum may be reduced to one-half the published visibility minimum for Category A aircraft, but in no case may it be reduced to less than one-quarter mile or 1200 feet RVR." For 34:1 penetrations (not applicable if 20:1 is penetrated) use: "Chart Note: Helicopter visibility reduction below 3/4 SM (or RVR 4000 as appropriate) not authorized." For 20:1 penetrations use: "Chart Note: Helicopter visibility reduction below 1 SM (or RVR 5000 as appropriate) not authorized." Do not apply this note to RNAV (RNP) "Authorization Required" approach procedures.

j. HAT/HAA.

(1) HAT. Enter height above touchdown zone elevation (TDZE) when straight-in minimums to a runway (including Copter) are authorized. For Copter straight-in and point-in-space (PinS) SIAPs noted to "proceed visually" to the landing site, enter "HAL." For Copter PinS IAPs noted to "proceed VFR" to the landing site, enter "HAS." See paragraphs 8-6-8p and 8-6-9. When evaluating foreign terminal instrument procedures and the threshold elevation is not available, use airport elevation.

Note: Helicopter procedures to elevated heliports (e.g., heliport on the roof of a hospital) and Point-in-Space (proceed VFR) procedures pose unique circumstances when calculating weather minimums. Consideration must be given to the elevation of the source providing the ceiling information. For example, if the weather source providing the ceiling information is considerably lower than the heliport on top of the building, a much higher ceiling value must be established when the HAL value is provided.

(2) HAA. Enter height above airport elevation for circling minimums.

k. ILS Category II/III or Special Authorization CAT I/II ILS. When applicable, enter Category II/III or SA CAT I/II ILS minimums in the Notes section immediately below the Minimums boxes. SA CAT I is an option at runways with standard CAT II or III, at runways with SA CAT II, or at CAT I runways. Establish only one set of either SA CAT II minimums or (standard) Category II minimums in the 100-foot to 199-foot range with the applicable Radio Altimeter (RA) and RVR established by TERPS criteria (i.e., SA CAT II must not be published if there is a standard CAT II or III.). CAT II RVR may be reduced to as low as 1000 where authorized by Flight Standards per Order 8400.13 and documented in the Notes section. At locations where ILS Category II procedures have been established, a separate Copter ILS Category II procedure may be developed that contains a HAT less than 200 feet but no lower than 100 feet above touchdown zone elevation. These Copter ILS Category II procedures are separate and use the standard Copter (CAT I) ILS naming convention, are documented on a separate Form 8260-3, and may contain localizer minimums on the same chart. A RA height must also be provided for publication with the DA. For copter procedures, the DA and HAT will be entered in the minima boxes and the RA will be entered in the Notes section adjacent to the Category II note. Enter these items as follows:

(1) For SA CAT I: SA Category I ILS - Special Aircrew and Aircraft Certification Required S-ILS 32L: CAT A, B, C, D, RA 154, RVR 1400, HAT 150, DA 806 MSL"

Note: A SA CAT I with a HAT not lower than 150 feet may be developed under Order 8400.13. The following entry must be made in the Notes section for publication on the approach chart:

"SA CAT I Chart Note: Requires specific OPSPEC, MSPEC, or LOA Approval and use of HUD to DH."

(2) For SA CAT II: "SA Category II ILS - Special Aircrew and Aircraft Certification Required S-ILS 32L: CAT A, B, C, D, RA 104, RVR 1200, HAT 100, DA 756 MSL" or "SA Category II ILS - Special Aircrew and Aircraft Certification Required S-ILS 32L: CAT A, B, RA 104, RVR 1200, HAT 100, DA 756 MSL; CAT C, D, RA 124, RVR 1400, HAT 120, DA 776 MSL."

Note: The SA Category II procedure is developed under Order 8400.13, at a location that is lacking ALSF and/or TDZ/CL lighting systems and/or other limiting requirements, and the following entry must be made in the Notes section for publication on the approach chart:

"SA CAT II Chart Note: Reduced Lighting: Requires specific OPSPEC, MSPEC, or LOA Approval and use of Autoland or HUD to touchdown."

(3) "Category II ILS - Special Aircrew and Aircraft Certification Required S-ILS 32L: CAT A, B, C, D, RA 104, RVR 1200, HAT 100, DA 756 MSL" or "Category II ILS - Special Aircrew and Aircraft Certification Required S-ILS 32L: CAT A, B, RA 104, RVR 1200, HAT 100, DA 756 MSL; CAT C, D, RA 124, RVR 1400, HAT120, DA 776 MSL."

Note: Category II procedures to a minimum of 1000 RVR using autoland or HUD to touchdown may be authorized under Order 8400.13. The following entry must be made in the Notes section for publication on the approach chart:

"CAT II RVR 1000 Chart Note: RVR 1000 authorized with specific OPSPEC, MSPEC, or LOA Approval and use of autoland or HUD to touchdown."

(4) "Copter ILS Category II - Special Aircrew and Aircraft Certification Required; RA 104."

(5) "Category III ILS - Special Aircrew and Aircraft Certification Required. S-ILS-32L: CAT III CAT A, B, C, D, RVR (Insert RVR value from checklist; see paragraph 4-4-2.).

(6) If the ATCT does not provide continuous service, publish a note on the chart indicating the applicable procedure is not authorized when the control tower is closed; for example, use: "CAT II/III Chart note: Procedure NA when tower closed."

l. Dual Minimums. Enter dual minimums, when authorized. Do not publish dual minimums unless a 60-foot operational advantage is obtained or a reduction in visibility can be achieved. To avoid proliferation of dual minimums, all IFR aircraft are assumed to have at least one VOR receiver. Dual minimums based on a stepdown fix combined with local and remote altimeter settings could result in four sets of minimums. When two remote sources are used, treat the source resulting in lower minimums as the "Local" altimeter setting source in the following paragraphs. Document only two sets of minimums. The combinations authorized are minimums with and without a stepdown fix; or minimums with local and remote altimeter settings.

(1) When authorizing minimums with and without a stepdown fix and which also require local and remote altimeter settings enter the minimums with and without the stepdown fix based on the Local altimeter in the two sets of minimums boxes. Address the minimums with and without the stepdown fix based on the Remote altimeter setting in a note and include the applicable visibility increases. Establish the required visibility as stated in paragraph 4-1-5.

Note: Normally an airport with an ILS does not have a remote altimeter setting. But where this does occur, the MDA adjustment might not be suitable for DA adjustment; i.e., the adjustment might be too great, and the visibility adjustments might differ.

(a) Compare visibilities to determine Note format:

1. Where precision and nonprecision visibility adjustment is the same, enter the following in the Notes section: "Chart note: When local altimeter setting not received, use (location) altimeter setting and increase all DAs/MDAs 60 feet, and all visibilities ½ mile." Use this Note also when visibility is affected in *all* categories; apply the greatest visibility increase.

2. Where precision and nonprecision visibility adjustments differ and visibility is affected in all categories, apply the greatest visibility increase to all categories and define application as follows in the Notes section:

"Chart note: When local altimeter setting not received, use (location) altimeter setting: increase DA to 287 feet and all visibilities 1/4 mile; increase all MDAs 60 feet and all visibilities ½ mile."

3. Where precision and nonprecision visibility adjustments differ and visibility is *not* affected in all categories, apply the greatest visibility increase only to those categories which are affected and define application as follows in the Notes section: "Chart note: When local altimeter setting not received, use (location) altimeter setting: increase DA to 287 feet and visibility CAT D ¼ mile; Increase all MDAs 60 feet and visibility CATs C and D ½ mile."

Note: CAT A is not affected until the HAT is more than 880 feet; CAT B is not affected until the HAT is more than 740 feet.

(2) When dual minimums are appropriate with local and remote altimeter settings, enter the title: "(LOCATION) ALTIMETER SETTING MINIMUMS" over the second set.

(a) When a procedure *does* contain a stepdown fix, but has only local or only remote altimeter setting minimums, enter the straight-in and circling minimums required without the stepdown fix in the first set of boxes. Enter the straight-in and circling minimums required with the stepdown fix in the second set of boxes.

(b) When a procedure does *not* contain a stepdown fix, but has both local and remote altimeter setting minimums, enter the local altimeter setting minimums in the first set of boxes and the remote altimeter setting minimums in the second set of boxes. Use the following Note: "Chart note: When local altimeter setting not received, use (location) altimeter setting."

Note: When the situation in paragraph 8-6-5l(1)(a)1 applies, a note is preferable to a second set of minimums.

(c) When a procedure does *not* contain a stepdown fix, but has two sets of part-time remote altimeter setting minimums, enter the lower minimums in the first set of boxes, and the higher minimums in the second.

(3) Stepdown fixes.

(a) On procedures where the course guidance and stepdown fix are obtained from different VOR facilities, publish two sets of minimums.

(b) On procedures where the course guidance and stepdown fix are obtained from different NDB facilities, publish two sets of minimums.

(c) Where paired DME is used and the procedure is *not* identified: ".../DME," use the fix name in the title: "NIXON FIX MINIMUMS."

(d) Where non-paired DME is used, as above, place an attention symbol (*) next to the title (e.g., NIXON FIX MIMIMUMS*), and enter the following in Additional Flight Data: "*DME from XYZ VORTAC."

(e) On procedures where the course guidance and the stepdown fix are obtained from facilities, which are of different types [except as noted in Order 8260.3, Volume 1], publish two sets of minimums. Use one of the following titles to identify the dual minimums:

1. On procedures where the fix is predicated on DME only: "DME MINIMUMS."

2. On procedures where a fan marker is used for the stepdown fix: "FM MINIMUMS."

3. On procedures where the stepdown fix is identified by radar only: "RADAR MINIMUMS."

Note: When radar fixes are specified, ATC must agree to provide the radar service on a continuous basis and the fix must be identified on the video map or map overlay.

(f) On procedures where course guidance and a stepdown fix use the same type of receiver, annotate in the minimums box that dual receivers are required; e.g., "AGNES FIX MINIMUMS (Dual VOR receivers required)" or "AGNES FIX MINIMUMS (Dual VOR receivers or DME required)."

m. Landing Minimums Limitations. Minimums are affected by a number of different circumstances and conditions. Examples are enumerated below indicating the appropriate action to be taken.

(1) Day and Night Minimums. The authorized minimums apply to both day and night conditions unless otherwise restricted. AeroNav Products must determine the operation of *all* lighting aids *prior* to authorizing night minimums. Permanently installed runway edge lights (including threshold/runway end lights), defining the lateral and longitudinal boundaries of the runway, must be operating to support night minimums [see AC 150/5340-30]. Airport or runway boundary lights are *not* adequate for night landing minimums unless the entire area between such lighting is suitable for landing. In special cases, portable runway lights may be used temporarily as described in AC 150/5345-50.

(2) Restriction of Night Minimums. When night minimums are not authorized or are higher than day minimums, a restriction must be entered in the Notes section to deny night minimums or to specify increased night minimums.

(a) If unable to authorize night minimums (e.g., when both straight-in and circling minimums are not authorized at night), use: "Chart note: Procedure NA at night." See also paragraph 8-6-5m(13).

(b) If increased night visibility is required by environmental conditions, such as extraneous lighting, use: "Chart note: Night visibility minimum__miles."

(c) When straight-in minimums are published to an unlighted runway, but another runway is lighted, use: "Chart note: Straight-in minimums NA at night."

(d) When only circling minimums are published and at least one runway is lighted, a note is not required for non-lighted runways. When no runways are lighted, use: "Chart note: Procedure NA at night."

(e) At an airport with multiple runways where straight-in minimums are authorized to a lighted runway, but the other runway(s) is/are unlighted, a note is not required for the unlighted runways.

(f) When only circling minimums are published and circling is not authorized at night, use: "Chart note: Procedure NA at night."

(g) When aircraft are prohibited from landing on a specific runway at night, use the following: "Chart note: Night Landing: Rwy X, XX NA"

(h) When Flight Standards (AFS-400) has approved use of the VGSI in lieu of obstruction lighting, use the following: "Chart note: When VGSI inop, procedure NA at night;" or "Chart note: Night Landing: Rwy X, XX operational VGSI required, remain on or above VGSI glidepath until threshold."

Note: A combination of paragraph (g) and (h) above may be used when applicable and would appear as: "Chart note: Night Landing: Rwy X, XX NA, Rwy X, XX operational VGSI required, remain on or above VGSI glidepath until threshold."

(3) Inoperative Components and Visual Aids. The Inoperative Components and Visual Aids Table informs the pilot how much to increase published minimums when certain components or visual aids are known to be inoperative. When the inoperative table adjustment is not compatible with the credit that has been authorized, add Notes to the procedure specifying the necessary adjustment. Enter one of the following in the Notes section:

(a) When credit has not been given to a visual aid to reduce visibility, use: "Chart note: Inoperative table does not apply to MALS RWY 30."

(b) In many instances, reference to a particular component or visual aid is not necessary as no portion of the inoperative table is applicable. In this case, use: "Chart note: Inoperative table does not apply."

(c) When the inoperative table applies only to a few cases, use: "Chart note: Inoperative table does not apply to CAT D;" or "Chart note: Inoperative table does not apply to S-LOC-31 CATs A and B."

(d) The inoperative table, in certain circumstances, does not provide a sufficient increase to minimums. When this situation occurs, use: "Chart note: For inoperative ALSF, increase S-7 CAT D visibility to 1 ¾;" or "Chart note: For inoperative ALSF, increase S-LOC-7 CAT D visibility to RVR 5000, and CAT E to RVR 6000."

(e) Where two sets of minimums are published, specify the applicable minimums affected. For example, on a VOR approach with DME minimums published as the second set, use: "Chart note: VOR Minimums: Inoperative table does not apply to S-30 CATs C and D. DME Minimums: For inoperative MALSR, increase S-30 CAT D visibility to 1 ¼ mile." Where the note applies equally to both sets of minimums, do not specify the minimums.

(f) Where a heliport approach lighting system (HALS) is installed and credit for lights has been taken, annotate the procedure to indicate the minimum no-light visibility applicable if the HALS become inoperative; e.g., "Chart note: For inoperative HALS, increase visibility to 1 mile."

(4) Weather Reporting / Altimeter Setting.

(a) In accordance with Order 8260.3, Volume 1, an altimeter setting (local or remote) is required to authorize landing minimums. Terminal weather observation and reporting facilities (in addition to remote facility status monitoring) must be available for the airport to serve as an alternate airport. Some airports do not have any weather reporting while others provide this service on a part-time basis. A number of airports have the capability to report altimeter settings only on a full-time or part-time basis. Some operators provide approved weather reporting services, full-time or part-time, to their own company aircraft or on a contract basis to others. Evaluate these factors to determine the type of notation that may be required to support landing and/or alternate minimums. Enter these restrictions in the Notes section.

Note: The phrase "except for operators with approved weather reporting service" is used only when such service is available.

(b) When a remote altimeter setting source is available on a 24-hour basis, use of a remote altimeter setting on a part-time basis will normally coincide with the loss of the local altimeter source; e.g., control tower closed, FSS closed, local weather office closed, etc. In these instances, use: "Chart note: When local altimeter setting not received, except for operators with approved weather reporting service, use Oakland altimeter setting and increase all MDAs 120 feet, and all visibilities ½ mile." Use city name unless more than one source is available in the city; then use the airport name; e.g., "Chart note: When local altimeter setting not received, use Miami Int'l altimeter setting...." Where appropriate, define application to DA and/or MDA, or address when visibility is *not* affected in all categories, within the standard note [see paragraphs 8-6-5l(1)(a)<u>1</u> and <u>2</u>].

(c) State identifiers. Include state identifiers *only* if confusion is possible; i.e., more than one city with the same name in close proximity, e.g., "Chart note: When local altimeter setting not received, use Springfield, MO altimeter setting and increase all MDAs 80 feet, and all visibilities ½ mile."

(d) When an altimeter setting is provided at uncontrolled airports, use standard notes described in paragraph 8-6-6e.

(e) When use of remote altimeter setting cannot be authorized, use: "Chart note: When Valle altimeter setting not received, procedure NA."

(f) The adjustment for a remote altimeter setting source is cumulative; i.e., it is additional to any inoperative component adjustment, terminal segment MRA adjustment, or altitude increase to ensure communication reception.

(g) When a MDA adjustment is published by note, the adjustment value is the difference between the MDA values based on primary and secondary sources. For example, if the MDA for primary altimeter is 660 and the MDA for secondary altimeter is 720, specify to increase all MDAs by 60 feet (720-660=60).

Note: Descent angle/gradient is calculated using values based on primary altimeter only.

(5) <u>Circling Conditions and Restrictions</u>. Publish one circling MDA (CMDA) for each aircraft category. Where obstructions/terrain would yield excessively high CMDAs or environmental concerns would prohibit over-flight of specified areas, portions of the circling obstruction evaluation area may be eliminated through sectorization if instructions clearly define the areas where circling maneuvering is not allowed. Identify sectors by reference to runway centerlines by entering the applicable restriction in the Notes section as follows:

(a) When a 180-degree sector is defined by restricting circling from one side of a runway, use "Chart note: Circling NA E of RWY 17-35."

(b) When a sector less than 180 degrees is defined by restricting circling between two runways, use "Chart note: Circling NA NW of RWYs 9 and 18."

(c) When a sector of more than 180 degrees is defined by restricting circling from one side of each of two runways, use: "Chart note: Circling NA E of RWY 18 and SW of RWY 12."

(d) When Circling minimums are restricted by aircraft category and runway combinations, use: "Chart note: Circling NA for CATs C and D NW of RWY 6-24."

(e) When Circling to a specific runway is restricted, use: "Chart note: Circling NA to RWYs 18 and 12."

(6) ILS/GLS restrictions. For GLS approaches, pending further evaluation by the FAA, autoland using GBAS is prohibited; use "Chart note: Autopilot coupled approach NA below (Decision Altitude)." Where flight inspection or Aircraft Certification Services establishes a restriction to the ILS/GLS approach, a NOTAM will be issued, and the restriction will be published in the Airport/Facility Directory (AFD). Where the restriction affects landing minimums or the MAP, issue an appropriate NOTAM. Publish a note using the same wording as stated in the flight inspection report; e.g., "Chart profile note: ILS unusable inside DA." No note is required for an unusable LOC back course, or for a LOC lateral coverage restriction with no terminal route through the restricted area.

(a) If the LOC will not provide adequate course guidance in the area between the MM and runway threshold, use: "Chart profile note: ILS unusable from MM inbound." Where an MM is not installed, flight inspection may provide a NM distance from threshold, or altitude, at which the ILS is not usable.

(b) When the GS will not provide satisfactory vertical guidance, restrict its use above or below a specific altitude. Use: "Chart profile note: GS unusable below/above (altitude)."

(c) When GS indications can be received on a LOC back course approach, use "Chart profile note: Disregard GS indications."

(d) When the rate of reversal in the GS exceeds the tolerances of Order 8200.1, United States Standard Flight Inspection Manual, establish a restriction for autopilot coupled approach 50 feet above the point (MSL) where the out-of-tolerance condition exists. Use: "Chart note: Autopilot coupled approach NA below (Decision Altitude)." Flight Inspection may also request that an autopilot coupled approach not be allowed at all. If that is the case, use: "Chart note: Autopilot coupled approach NA."

(e) When terrain, obstacles, descent gradient, etc., do not allow the use of a LOC procedure associated with the ILS when the GS is not used, place NA in the visibility column for each LOC category affected. If, in such an instance, another procedure must be used instead, enter the following in the Notes section: "Chart planview note: When GS not used, use LOC RWY 26 procedure."

(7) Simultaneous Dependent and Independent Approach Operations. When ATC has determined that certain instrument approach procedures meet the requirements to support either of these operations, the chart must be annotated to identify the runways and/or procedures

authorized for these types of simultaneous operations. This information will be entered in the Notes section.

(a) When the operation is authorized with all GLS and/or ILS and/or RNAV procedures to a given runway identify the runway(s) for which simultaneous operations are authorized. For example, enter the following in the Notes section: "Chart note: Simultaneous approach authorized with RWY 27R." If there is more than one variation of a runway number, use a "/" between the variations and list them in the order of "L/C/R" as applicable, i.e., "…with RWY 27L/C." If there is more than one runway number, use the word "and" to separate them, i.e., "…with RWY 27L/C and RWY 28C/R."

(b) When the operation is *not* authorized with all GLS and/or ILS and/or RNAV procedures to a given runway, identify each procedure by name (as printed on the chart) for which the operation is authorized to the affected runway. For example, the ILS or LOC RWY 27L is authorized with all procedures to runway 27R except the RNAV (RNP) procedure, enter in the Notes section: "Chart note: Simultaneous approach authorized with ILS or LOC RWY 27R, ILS RWY 27R (SA CAT I), ILS RWY 27R (CAT II), ILS RWY 27R (CAT III), RNAV (GPS) Y RWY 27R".

(c) When informed by an ATC facility that simultaneous operations will be conducted using the provisions in Order JO 7110.308, 1.5-Nautical Mile Dependent Approaches to Parallel Runways Spaced Less Than 2,500 Feet Apart, use of vertical guidance is required. In the Notes section enter: "Chart note: Simultaneous operations require use of vertical guidance; maintain last assigned altitude until established on glideslope (for RNAV procedures use 'glidepath')." If a condition exists where there are more than two runways, it may be necessary to distinguish which runway(s) are subject to this requirement. If this occurs, insert the applicable runway(s) subject to this requirement; e.g., "Simultaneous operations with ILS or LOC Rwy 12 require use of vertical guidance; maintain…"

(d) For RNAV (GPS) procedures with LNAV minima published on the same chart with LPV or LNAV/VNAV minima, include the following in the Notes section: "Chart note: LNAV procedure NA during simultaneous operations."

(e) For GLS, RNAV (GPS) and RNAV (RNP) procedures used for simultaneous operations, enter the following in the Notes section: "Chart note: Use of FD or AP providing RNAV track guidance required during simultaneous operations."

Note: Document the applicable chart notes in paragraphs (a) through (e) in the order they appear above to ensure they are placed in that sequence on the chart.

(8) Radio Controlled Lights. At many locations, lighting aids are radio controlled by the pilot. The standard keying system to activate the lights is described in AC 150/5340-27. AC 90-42 establishes common traffic advisory frequencies (CTAF) to be used at uncontrolled airports including those with part-time towers. Radio control of airport lighting systems from aircraft should be used only at airports where ATC facilities are not in operation. Existing systems that use frequencies other than the CTAF may continue to be used.

(9) PCL Note Charting. Pilot Control Lighting (PCL) is depicted on AeroNav Products SIAP charts by the use of negative symbology. AeroNav Products obtains information for adding the symbology to SIAPs from NFDC's National Flight Data Digest (NFDD). AJV-21 must review each published procedure to ensure that PCL charting is correct.

(10) All Special IAPs at locations that have PCL must have light activation notes documented on Form 8260-7A. Use: "Chart note: Activate MALSR RWY 25, MIRL RWY 7-25 (as appropriate) - CTAF" (or designated frequency).

(11) Lights by Prior Arrangement. When the operation of lights must be arranged for before flight, enter the following in the Notes section: "Chart note: Procedure NA at night except by prior arrangement for runway lights."

(12) Lights on Request. When lights are only available by radio contact with an FBO, airport manager, etc. use: "Chart note: Request MIRL RWY 7/22, and VASI RWY 22 - CTAF" (or appropriate frequency if other than CTAF).

(13) Night landing minimums must *not* be authorized unless the requirements of AC 150/5340-27 are met. See also paragraphs 8-6-5m(1) and (2). Use: "Chart note: Procedure NA at night."

8-6-6. Notes.

Note: See also paragraphs 2-9-3, 4-1-5, 8-2-4b, 8-2-5f, 8-6-4b, 8-6-5i, 8-6-5k, 8-6-5l, 8-6-5m(1) through (13), 8-8-2b and d, and 8-8-3f.

a. General. Data entered in this section of Forms 8260-3/4/5/7A are items that should appear on the published procedure chart as a note; e.g., notes pertaining to conditional use of a procedure, notes restricting the use of a procedure, and other notes required for procedure clarification. Unless dictated by IACC specifications, or specified as "Chart planview note" or "Chart profile note," all notes will be charted the Briefing Strip, Notes section, of the procedure chart. When multiple notes are required, they may be combined under a single heading: e.g., "Chart planview notes," "Chart profile notes," or "Chart notes" followed by the actual notes. If sufficient space is not available on the form for all necessary notes, continue on the Form 8260-10. When it is necessary to use Form 8260-10, state: "Continued on page 2." When documenting multiple approaches (e.g., CAT II/III) on a single 8260-series form that will be charted separately, notes that do not pertain to all procedures must indicate which procedure it is to be charted on; e.g., "CAT I Chart Note: Circling NA North of Rwy 10L-28R" or "CAT II Chart Note: RVR 1000 authorized with specific OPSPEC, MSPEC, or LOA Approval and use of autoland or HUD to touchdown."

Note: For "Special" instrument procedures that are charted by the proponent or agent hired by the proponent, placement of chart notes may be left up to the procedure development authority. However, chart note placement may be determined unacceptable by the Flight Standards Procedure Review Board (PRB) and require different placement or compliance with what is specified in this order.

b. Note Restriction. Except as specified in paragraph 8-6-5m(7), SIAPs must *not* contain notes that may be construed as regulating traffic or providing traffic advisory service. Notes containing text such as "…when assigned by ATC…" are considered to be regulating traffic and must not be used. Notes such as "VFR practice approaches NA," Parachute operations southwest of airport," Glider activity near airport," etc. if required, should be in the Airport Remarks section of the AFD. Notes regarding delays due to traffic also belong in the AFD.

c. Avoid caution notes about obstacles. Notes such as: "High Terrain all quadrants;" "Steeply rising terrain to 5300 4 miles SW of approach course;" or "50 feet unlighted trees south of RWY 9 THLD" are *not* appropriate.

d. Avoid listing specific times in notes whenever possible, since a change in hours of operation would require amended procedures. Instead, refer to the situation directly relating to the cause. Use: "Chart note: When control tower closed" or "at night." When there is *no alternative*, times may be used if the airport operator provides assurance that the hours will not change. Most operators adjust UTC hours of operation so that local hours remain the same whether or not daylight saving time is in effect. In such cases, it is appropriate to use local time in notes.

e. When a local altimeter setting is available at an uncontrolled airport, including those with part-time towers, the setting will be obtained on the established CTAF for that airport whenever possible. The NFDC is responsible for designating and publishing the CTAF [see AC 90-42 and AIM chapter 4]. In such cases, a note may be required. Some operators provide approved weather reporting services, full-time or part-time, to their own company aircraft or on a contract basis to others. Conditions that require notes and the associated entry for the Notes section are as follows:

Note: The phrase "except for operators with approved weather reporting service" is used only when such service is available.

(1) At airports with a part-time tower and an FSS, the CTAF will be a tower frequency and will be monitored by the FSS whenever the tower is closed. No note should be needed if full-time altimeter setting service is provided.

(2) At airports with an FSS and no tower, the CTAF is an FSS frequency. No note is needed for a full-time FSS. For a part-time FSS, use: "Chart note: Obtain local altimeter setting on CTAF; when not received, use (location) altimeter setting and increase all MDAs 80 feet, and all visibilities ½ mile." Where appropriate, define application to DH and/or MDA, or address when visibility is *not* affected in all categories, within the standard note [see paragraphs 8-6-5l(1)(a)1 and 2]. If a remote altimeter source cannot be approved, end the note: "...; when not received, procedure NA."

(3) At airports with a part-time tower and no FSS, the CTAF will be a tower frequency even when the only altimeter source is UNICOM. In such cases use of UNICOM is authorized provided the note gives an alternate course of action if UNICOM is not contacted. In this instance, use: "Chart note: When control tower closed, obtain local altimeter setting on UNICOM; when not received, (alternate action)."

Note: Automated UNICOM (AUNICOM) systems do not qualify as a weather reporting system, nor can they be used as an altimeter source when using instrument flight procedures. AUNICOMs are “advisory” systems only.

(4) At airports with no tower or FSS, with the altimeter setting available on UNICOM, the CTAF is UNICOM. An alternate course of action is required. Use: “Chart note: Obtain local altimeter setting on CTAF; when not received, (alternate action).”

(5) At airports with no tower, part-time FSS and UNICOM are not available, use the following when the FSS is shut down: “Chart note: Obtain local altimeter setting from ATC; when not available, procedure NA.”

(6) When using remote CTAF altimeter, use “Chart note: Obtain West Allis altimeter setting on CTAF (122.8); when not received, (alternate action).”

(7) Multiple altimeter sources must not result in more than two sets of minimums. If the chosen combination of local and/or remote sources does not provide full-time coverage, deny use of the procedure when no altimeter setting is available. Use the following: “Chart note: When control tower closed, obtain local altimeter setting on CTAF; when not received, use Smith altimeter setting and increase all MDAs 140 feet, and all visibilities ½ mile; when neither received, procedure NA.” Where appropriate, define application to DA and/or MDA, or address when visibility is *not* affected in all categories, within the standard note [see paragraphs 8-6-5l(1)(a) 1 and 2].

(8) When LNAV/VNAV minimums are based on remote altimeter setting, Baro-VNAV is not authorized. Where a remote altimeter setting is primary, use: “Chart note: Baro-VNAV NA.” Where the remote altimeter setting is secondary, use: “Chart note: Baro-VNAV NA when using (location) altimeter setting.”

(9) When a VDP has been established and a back-up *remote* altimeter source is provided, use: “Chart note: VDP NA when using (location) Altimeter Setting.”

f. Automated Weather Observing System (AWOS); Automated Surface Observing System (ASOS); Automated Weather Sensor System (AWSS).

(1) AWOS is an FAA sponsored, off the shelf, automatic observation system. The weather and altimeter information is forwarded to the pilot via discrete VHF radio frequency or on a NAVAID, and may be available via commercial telephone access. Additionally, FAA maintained AWOS-3s are connected to the Weather Message Switching Center Replacement (WMSCR) weather distribution network. Non-Federal AWOS, i.e., not sponsored by the FAA, are classified into seven types**:**

(a) AWOS-A. Reports altimeter setting only.

(b) AWOS-1. Reports altimeter setting, wind, temperature, dewpoint, and density altitude.

(c) AWOS-2. Reports the same information as AWOS-1 plus visibility.

(d) AWOS-3. Reports the same information as AWOS-2 plus cloud/ceiling data and precipitation accumulation.

(e) AWOS-3P. Reports the same as AWOS-3 System, plus precipitation type/intensity (present weather).

(f) AWOS-3PT. Reports the same as AWOS-3P System, plus thunderstorm/lightning reporting capability.

(g) AWOS-3T. Reports the same as AWOS-3 System, plus thunderstorm/lightning reporting capability.

Note: Some Non-Federal AWOS have a frequency and phone number only and do not go directly into the WMSCR. However, weather from many Non-Federal AWOS-3 (or better) is put on WMSCR by commercial providers per an agreement with the FAA.

(2) ASOS is a National Weather Service sponsored automatic observation program designed to replace human observers. ASOS locations will have commercial telephone access, may have discrete VHF air-to-ground frequency, and will be connected to WMSCR.

(3) AWSS is a FAA sponsored automatic weather observation system and is functionally the same as ASOS.

(4) AWOS-3/ASOS/AWSS/Non-Federal AWOS transmitted to WMSCR does *not* require a published backup altimeter source, and no notes are required on the procedure. However, a suitable backup source must be determined and adjustment computed for contingency purposes; annotate this data in Remarks on Form 8260-9. Each OSG-FPT must determine if a procedure requires a full time remote altimeter setting note published based on reliability of the AWOS/ASOS/AWSS/Non-Federal AWOS.

(5) Non-Federal AWOS not transmitted to WMSCR *do* require backup altimeter sources. Do *not* publish backup altimeter source information as a second set of minimums for the AWOS backup altimeter source. Instead, use: "Chart note: When local altimeter setting not received, use (location) altimeter setting and increase all MDAs 100 feet and all visibilities ½ mile." Where appropriate, define application to DA and/or MDA within the standard note [see paragraphs 8-6-5l(1)(a)1 and 2]. If a suitable backup altimeter source is not available, deny use of the SIAP via the following Note: "Chart note: When local altimeter setting not received, procedure NA." Use these standard notes where AWOS is broadcast.

(6) AWOS may be used as a remote secondary altimeter source when data is available to FSS specialists and ATC facilities through WMSCR.

(7) AWOS/ASOS/AWSS/Non-Federal AWOS at a remote location may be used as a primary altimeter source for an airport. In this instance, use: "Chart note: Use (location) altimeter setting." However, Non-Federal AWOS not transmitted to WMSCR still require backup altimeter setting sources. In these cases use "Chart note: Use (location) altimeter setting;

when not received, use (location) altimeter setting and increase all MDAs 100 feet and all visibilities ½ mile." Where appropriate, define application to DA and/or MDA within the standard note [see paragraphs 8-6-5l(1)(a) 1 and 2]. When an airport uses a remote AWOS/ASOS/AWSS that is not available from a FSS to be used as a primary altimeter source, flight inspection ensures AWOS/ASOS/AWSS/Non-Federal AWOS discrete frequency reception at the IAFs of that airport.

(8) AWOS/ASOS/AWSS/Non-Federal AWOS-3 may be used as a remote secondary altimeter source and to support alternate minimums at an airport when:

(a) They are installed and commissioned.

(b) Their data are available to FSS specialists and ATC through WMSCR for flight planning purposes.

(9) When the AWOS/ASOS/AWSS information is transmitted over a discrete frequency (not CTAF) or the voice portion of a local NDB or VOR, AWOS is receivable within 25 NM of the AWOS site, at or above 3000 feet and below 10000 feet AGL. If AWOS/ASOS/AWSS is located on the voice portion of a NAVAID, flight inspection checks for interference. This check is performed prior to test transmissions.

g. ASR or ARSR may be available to provide assistance in vectoring to the approach course, identifying fixes, or to provide instrument approaches. Include applicable notes to inform the pilot of these capabilities and applicability to the instrument approaches.

(1) When ASR and/or PAR approaches are published for the airport, see paragraph 8-6-8m.

(2) Where GPS or radar is the only method for procedure entry from the en route environment, enter the following: "Chart planview note: GPS or RADAR REQUIRED."

Note 1: Paragraph 8-6-6g(2) does not apply to RNAV (GPS) or RNAV (RNP) procedures.

Note 2: When the conditions of paragraphs 8-6-6g(2) and 8-6-6h(3) exist at an airport, *both* entries are required. Prior air traffic coordination is necessary to ensure AT capability and agreement to provide these services. Procedures with radar requirements should be avoided whenever possible.

h. Equipment Requirement Notes. Determine the need for equipment notes after evaluating all SIAP segments, including missed approach.

Note: To avoid proliferation of equipment requirement notes, all IFR aircraft are assumed to have at least one VOR receiver. Therefore, the note "VOR required" is not appropriate.

(1) Where certain equipment is required for procedure entry from the en route environment, enter the following in Additional Flight Data: "Chart planview note: ADF REQUIRED"; or, "ADF OR DME REQUIRED."

(2) Where other navigation equipment is required to complete the approach; e.g., VOR, ILS, or other non-ADF approaches requiring ADF or DME for missed approach, use: "Chart note: ADF required", or "Chart note: DME required." When radar vectoring is also available use: "Chart note: ADF or Radar required."

(3) Where radar is the only method of determining or defining a terminal fix, use: "Chart note: Radar Required." See paragraph 8-6-6g(2) note.

(4) ILS/LOC procedures that require RNAV for all segments leading to the intermediate fix use: "Chart Planview Note: GPS REQUIRED."

(5) ILS/LOC procedures that contain both conventional and RNAV Initial segments must have a note in the Planview, adjacent to the applicable IAF where the RNAV segment begins, use: "Chart planview note adjacent to (fix name): GPS Required."

(6) GLS procedures require the use of GPS to navigate to the GLS final approach segment and execute the missed approach. Use: "Chart Note: GPS REQUIRED."

i. Approach Light Plane Penetrations. Do *not* publish notes advising of approach light plane penetrations. When there are penetrations of the approach light plane, the responsible Air Traffic Service Area and regional airports division must jointly take action to either remove the obstacle or modify the system to accommodate the obstacle. If this is not possible, the appropriate Technical Operations office processes an installation waiver. Existing notes referring to approach light penetrations must be removed from the approach procedure when an appropriate waiver has been approved.

j. The use of notes to prohibit a final approach from a holding pattern has been *discontinued*. See paragraph 8-6-7f(3).

k. When the "Fly Visual" from MAP to landing area provisions of Order 8260.3, Volume 1, chapter 3, have been applied, annotate the chart as stated in the Flight Standards approval documentation.

l. DME frequencies are paired with the frequencies of the VOR or localizer. When a non-paired DME is used in a VOR/DME, LOC/DME, etc., procedure, simultaneous reception of both facilities must be assured. This requires a note indicating the DME location and the identification of both facilities: "Chart note: DME from XYZ VORTAC. Simultaneous reception of I-ABC and XYZ DME required." DME frequencies are not paired with NDBs; and DME antennas may or may not be collocated with the NDB. For NDB/DME SIAPs, use: "Chart note: Simultaneous reception of ABC NDB and XYZ DME required." See paragraphs 8-2-6c, and 8-6-5l(l)(a)(1).

m. Copter procedures require notes relating to missed approach instructions, as well as airspeed limitations on certain segments.

(1) For PinS "Proceed VFR" approach procedures, use: "Chart planview note: Proceed VFR from (MAP) or conduct the specified missed approach."

(2) For PinS "Proceed Visually" approach procedures, use: "Chart planview note: Proceed visually from (MAP) or conduct the specified missed approach."

(3) Use the following note for feeder (when applicable), initial, and intermediate approach segment speed restrictions: "Chart planview note: Limit feeder, initial, and intermediate approach to XX KIAS." See subparagraph (4), Note 2, below.

(4) Use the following note for final and missed approach segment speed restrictions: "Chart planview note: Limit final and missed approach to XX KIAS."

Note 1: For procedures designed to support USA/USAF/USN/USCG operations, the note should read: "Limit all segments to 90 KIAS."

Note 2: These speeds are left to the discretion of the procedure developer based on the predominant helicopter model that will use this procedure and/or as limited by the criteria standards used for procedure development.

(5) Holding airspeed is also restricted for containment based on the unique wind affect when holding at slow airspeeds. This requires the airspeed to be increased upon reaching the missed approach altitude. When the chart note in paragraph 8-6-6m(4) above is applied and missed approach holding has been established, use the following note: "Chart planview note: Increase to 90 KIAS (or greater) upon reaching the missed approach altitude; Maintain 90 KIAS (or greater) while in holding."

(6) Use the following note when the missed approach requires a climb gradient greater than standard: "Chart note: Missed Approach requires minimum climb of (number) feet per NM to (altitude)."

n. VGSI and IAP glidepath angles/vertical descent angles should be coincidental (angles within 0.2 degrees and TCH values within 3 feet). Whenever a published glidepath/ descent angle or TCH is not coincident with the VGSI angle for a runway, use the applicable note below.

(1) Where precision/APV approach (ILS, or RNAV) glidepath angles and/or TCH values are not coincident with published VGSI values, use: "Chart profile note: VGSI and (ILS/RNAV as appropriate) glidepath not coincident (VGSI Angle {angle}/TCH {feet})."

(2) Where nonprecision vertical descent angles (VDAs) and/or TCH values are not coincident with published VGSI values, use: "Chart profile note: VGSI and descent angles not coincident (VGSI Angle {angle}/TCH {feet})."

Note: Do not enter the VGSI angle/TCH numerical values; this information will be obtained by chart producers from the applicable source.

o. Where DME/DME RNP-0.3 is not authorized, use "Chart Note: DME/DME RNP-0.3 NA." Where DME/DME RNP-0.3 is authorized, use "Chart note: DME/DME RNP-0.3 Authorized." Where DME/DME RNP-0.3 is authorized only when required facilities are necessary for proper navigation solution, use: "Chart note: DME/DME RNP-0.3 Authorized; ABC and XYZ must be Operational."

p. LDA instrument procedures with a glide slope must be identified as such with note in the planview, use: "Chart planview note: LDA/GLIDE SLOPE."

q. Instrument approach procedures with "PRM" in the title (e.g., ILS PRM RWY 12R, LDA PRM RWY 22L, RNAV (GPS) PRM RWY 18R, etc.) must contain an instructional note that reads as follows:

"Chart note: SIMULTANEOUS CLOSE PARALLEL APPROACH AUTHORIZED WITH ILS PRM (or RNAV) RWY (number) L/R. PROCEDURE NOT AUTHORIZED WHEN GLIDE SLOPE NOT AVAILABLE. DUAL VHF COMM REQUIRED. SEE ADDITIONAL REQUIREMENTS ON AAUP."

r. Simultaneous Offset Instrument Approach (SOIA) procedures with "PRM" in the title (e.g., ILS PRM RWY 12R, LDA PRM RWY 22L, etc.) must contain the following in addition to what is required in paragraph 8-6-6q:

(1) Change first sentence of paragraph 8-6-6q example to read:

(a) For the ILS PRM approach: "SIMULTANEOUS APPROACH AUTHORIZED WITH LDA PRM RWY (number) L/R."

(b) For the LDA PRM approach: "SIMULTANEOUS APPROACH AUTHORIZED WITH ILS PRM RWY (*number*) L/R."

(2) Specify the distance between centerlines of the adjacent runway, use the following:

"Chart note: RWY (number) and (number) separated by (number) feet centerline to centerline."

(3) Specify "DME REQUIRED" on LDA PRM approach plate: Chart note: DME REQUIRED."

s. Helicopter RNAV Approach Procedures.

(1) For documentation purposes, consider COPTER GPS approaches to be grouped into three categories:

(a) <u>Approach to a runway</u>. COPTER RNAV (GPS) RWY XX approach procedure, not associated with a heliport.

(b) <u>Approach to a Heliport</u>. COPTER RNAV (GPS) XXX approach procedures that are either straight-in to a heliport, or constructed using PinS criteria or noted "Chart Planview Note: PROCEED VISUALLY…;" i.e., visual segment evaluated from MAP to helipoint.

(c) <u>Approach to a PinS</u>. COPTER RNAV (GPS) XXX approach procedures constructed using PinS criteria and noted "Chart Planview Note: PROCEED VFR…;" i.e., visual segment evaluated only at the MAP.

(2) When the procedure has been evaluated to permit both "PROCEED VISUALLY" and "PROCEED VFR" operations, "Proceed Visually" will be published on the chart and the option to use "Proceed VFR" may be implemented via NOTAM. Document this information in the following format:

"Proceed VFR" area evaluated and may be initiated by NOTAM when required.

(3) Document one destination airport or heliport on the 8260-3/5/7A forms for approaches to a runway, and approaches to a heliport, or a PinS approach to a heliport noted "PROCEED VISUALLY." PinS approach procedures noted "PROCEED VFR" may serve more than one destination.

(4) The visual segment is based on the premise that the pilot will maintain level flight at the MDA until the helicopter is in a position to initiate a descent to the helipoint. When obstacles preclude an immediate descent at the MAP to the final approach and takeoff area (FATO) area and an ATD fix has been established to provide a descent point to the FATO, use the following: "Chart profile note: Maintain (MDA altitude) until (distance) NM past (MAP Fix Name)."

8-6-7. Missed Approach.

a. General. The missed approach represents a critical phase of flight; therefore, the missed approach should be designed with a minimum of complexity. The instructions on the form must reflect the actual design. The straight-ahead missed approach is the most desirable. Each non-radar missed approach must terminate at a clearance limit (fix or facility) and "should" terminate/connect to the en route structure.

Note: For helicopter procedures, it is recommended that the missed approach terminate/connect to the en route structure, but it is not required.

b. Clearance limit altitudes specified in missed approach instructions may be rounded to nearest 100-foot increments, provided Required Obstacle Clearance (ROC) is maintained. Other altitudes used in the missed approach should also use 100-foot increments. If this causes SIAP construction difficulties, use of 50-foot increments is the preferred alternative, with use of 20-foot increments the last resort.

c. Missed Approach Point. On precision and LPV procedures the DA establishes the MAP. On nonprecision approach procedures, the MAP is established at a specified fix or at a specified distance from a fix or facility. On ILS procedures, the two MAPs should be coincidental. Additionally identify both MAPs - one for the full ILS (DA), and one for the LOC-only minimums. Identification of the LOC MAP will ensure the publication of a time/distance table on the associated approach chart. Specify distances to the nearest hundredth of a mile.

(1) Form 8260-3/7A. For the precision portion of the ILS procedure, the MAP is pre-printed on the form as: "ILS: at the DH." For RNAV (GPS) enter as appropriate: "LPV: DA," "LNAV/VNAV: DA," "LP: (Fix Name)," "LP: RWXX," "LNAV: (Fix Name)," "LNAV: RWXX." Designate the LOC MAP as a specific distance in 0.01 of a mile after a specified fix or

facility or at a specified fix or facility. If DME is available, establish a DME fix in hundredths of a mile for the nonprecision MAP: "LOC: X.XX MILES AFTER (FIX NAME) INT/X.XX DME OR AT (FIX NAME)/I-XXX X.XX DME FIX.

(2) Forms 8260-4/5/7A. In the box, titled "MAP," identify the missed approach point as "a distance after (or at) a specified fix or facility" as appropriate. Establish a DME fix in hundredths of a mile if DME is available.

(3) RNAV. Do *not* list MAP coordinates for GPS or radial/DME for VOR/DME RNAV. Enter the name of the MAP WP as follows:

BONLI (MAP not at threshold)
RW16L (MAP at threshold)

d. Missed Approach Instructions. Where possible, develop missed approach procedures (except radar) using the same type of navigation guidance utilized for the final approach segment.

Note: When using the word "direct" in the missed approach instructions, ensure that all categories of aircraft are evaluated; i.e., CAT A is not encompassed in CAT D missed approach area and vice versa. On RNAV procedures, use the term "direct" *only* when design incorporates a DF leg.

Normally, a missed approach course/heading should be specified. If no course/heading is specified, the aircraft is expected to maintain the last established course/heading. Do *not* use the terminology "Climb runway heading" or "Climb straight ahead"; e.g., use Climb to 2800..." For turning missed approach procedures, specify the direction of turn; e.g., "Climb to 3100 then left turn direct XYZ VOR/DME and hold."

Note: To standardize and clarify altitudes and the meaning of "and" or "then" when used as connecting words between segments of the missed approach, "and" means a continuous climb to the stated altitude; "then" means the altitude condition must be reached at the prior to the connecting word "then", and either is maintained through the remaining missed approach or a second altitude will be stated.

(1) Where the missed approach course differs from the final course: "Climb to 2800 on ABC R-180 to ABC VORTAC and hold."

(2) When the missed approach point is also the missed approach holding fix and straight-ahead climb is not practical: "Climbing right turn to 2500 in ABC VOR holding pattern." In some cases, a straight-ahead climb, or climb via a specified course/heading to an altitude, prior to returning to the holding fix, may be necessary for aircraft with larger turning radii. When this occurs, use the terminology in paragraph 8-6-7d(3).

(3) When obstacles in a turning missed approach area require an initial straight-ahead climb: "Climb to 3100 then climbing left turn to 4000 direct ABC VOR and hold" or "Climb to 3100 on ABC R-180 then climbing left turn to 4000 direct ABC VOR and hold."

(4) When circumstances (terrain, obstructions, special use airspace, etc.) require an immediate turn: "Immediate climbing right turn to 4000 direct ABC VOR" or "Immediate climbing right turn to 4000 on heading 070 then direct ABC VOR and hold."

Note: The word "immediate" is an emotion-laden word and should only be used when deemed absolutely necessary by the procedure designer and/or flight inspection pilot to enhance safety. If used, document Form 8260-9 with reason this was used.

(5) Missed approach procedures requiring a turn of more than 15 degrees (except for helicopter procedures) must specify an altitude that is at least 400 feet above the TDZE prior to commencing a turn. Round the resulting altitude to the next higher 100-foot increment: "Climb to 1200 then climbing left turn to 3100 on heading 070 and ABC R-167 to ABC VOR and hold." Alternatively, a specific point (fix, waypoint, etc.) that will allow sufficient distance, at an assumed 200 feet/NM (400 feet/NM for helicopter operations) or specified gradient rate of climb to reach 400 feet above TDZE may be used: "Climb on ABC R- 090 to 9 DME, then climbing left turn to 5000 direct XYZ VORTAC and hold." See also paragraph 8-6-7b for rounding guidance.

(6) If the procedure serves VOR as well as TACAN equipped aircraft, address TACAN requirements also: "Climb to 5500 on ABC R-111 then climbing right turn to 6000 direct ABC VORTAC and hold (TACAN aircraft continue on ABC R-280 to CAROL 10 DME and hold W, LT, 100 inbound.)"

(7) LOC courses are specified in compass points, and NDB courses as "courses to" or "bearings from:" "Climb to 3000 on I-ABC Localizer NE course (030) and course 350 to DEF NDB and hold."

(8) When the missed approach requires no specific direction of turn: "Climb to 7000 on ABC R-197 then direct ABC VOR and hold."

(9) Detailed RNAV missed approach instructions may not be required when the missed approach being depicted in the planview of approach chart clearly conveys what is coded in the database loaded into the aircraft's navigation system. However, the procedure specialist may, elect to publish detailed RNAV missed approach instructions when deemed necessary to ensure turning and/or altitude limitations are clearly understood by the pilot. When doing so, those instructions must convey the intended wording to the employed leg type. For example, the word "course" reflects a CF leg design; "track" reflects a TF leg design; "direct" indicates DF leg. However, when an RF leg is used, specify only the direction of the turn, (i.e., do not use "radius" as part of the instructions).

Examples:

"Climb to 5000 on the RNAV missed approach route to LVD VOR and hold" or,

"Climb to 8000 on the RNAV missed approach route to JAGUR and hold, continue climb-in-hold to 8000" or, “Climb to 5000 on track 080.22 to SANDY and track 104.56 to GINGR and hold” or,

“Climbing left turn to 5000 direct CHERL and hold” or,

“Climb on course 098.32 to JARID, then climbing right turn to 6000 direct BOYCA and hold,” or,

“Climb to 4000 on track 281.06 to FIKOG, right turn to WODVU, then track 011.23 to BTG VORTAC and hold” or,

Climb to 2500 direct CRAZY then climbing right turn to 5000 direct INSAN and direct LOONY and hold.

(10) RNAV (RNP) missed approach procedures require a note in the briefing strip that informs the pilot when the missed approach segment requires the use of RNP less than 1.0. Use: “Chart note: Missed approach requires RNP less than 1.0.”

Note: This note is required when the final approach segment (FAS) RNP is carried into the missed approach segment, i.e., missed approach *does not* splay at 15 degrees from the FAS RNP area.

e. Missed Approach Climb Gradient (CG). When a missed approach climb gradient in excess of 200 feet/NM (400 feet/NM for rotary wing) has been established, the following items must be accomplished:

(1) The required gradient must be published on the chart. Enter the required gradient in the Notes section as follows: “Chart note: *Missed Approach requires minimum climb of (number) feet per NM to (altitude).”

Note: An asterisk (*) or other attention symbol, as appropriate, will be used to indicate which line of minima requires the use of the climb gradient greater than the minimum standard.

Examples:

LPV DA*
LNAV/VNAV DA**
LPV DA
LNAV/VNAV DA
RNP 0.15 DA@
RNP 0.22 DA@@

(2) In addition to the lower minima that require the use of the climb gradient greater than the minimum standard, minima will be published to support the minimum standard climb gradient for the same type of minima (see examples above). It is preferred that both minima be placed on the same chart; however, an alternative is to publish a second chart containing the same type minima as the first chart that will permit the use of a standard missed approach climb gradient. If the “second chart” method will be used, reference to the alternative must be placed on the chart containing the climb gradient greater than the minimum standard, referring to the

procedure with the standard climb gradient. In addition to the chart note specified in paragraph 8-6-7e(1) above, add at the end: "; if unable to meet climb gradient, see {procedure name}."

(3) Do not establish a climb gradient greater than the minimum standard for Circling procedures.

f. Missed Approach Holding. Holding must be established at the clearance limit. When holding is specified as part of the missed approach instructions, include holding details under Additional Flight Data. Do not enter holding details under Additional Flight Data when the missed approach is to the FAF or IF where a holding pattern is used in lieu of PT. When missed approach holding is going to be provided, it must be established at the clearance limit. When charting of the missed approach holding pattern is not required by ATC, include the evaluated holding pattern information in the Additional Flight Data with the note "Do Not Chart." Additionally, document on the Form 8260-9 a reason for not charting.

(1) When a missed approach climb-in-holding is required, include this information in the missed approach instructions: "Climb to 8000 on course 015 to DIXIE and hold, continue climb-in-hold to 8000." If the 200/230 KIAS climb-in-hold speed has been applied for holding patterns restricted to 175 KIAS [see paragraph 8-5-2h(7) Note], include that speed restriction in the missed approach instructions: "Climb to 8000 on course 015 to DIXIE and hold, do not exceed 230 KIAS when continuing climb-in-hold to 8000."

(2) When a missed approach holding altitude has been established that does not permit a return to the IAF or allow for en route flight, include in the missed approach instructions the altitude that can be climbed to in the holding pattern to reach the En route structure: "Climb to 4000 on course 270 to BONZO and hold, continue climb-in-hold to 9000."

Note 1: Adequate communication and radar coverage must be considered when climb-in-hold is dependent on ATC authorization.

Note 2: Climb-in-holding guidance also applies when the missed approach holding is collocated with a "hold-in-lieu" approach segment.

(3) Where a holding pattern is established at a final approach fix in lieu of a conventional procedure turn, the minimum holding altitude must meet the altitude limitation requirements of Order 8260.3.

Note: Holding in-lieu-of PT at the FAF is not authorized for RNAV procedures.

(4) Where a holding pattern is established at an intermediate fix in lieu of a conventional procedure turn, the rate of descent to the final approach fix must meet the descent gradient requirements of Order 8260.3.

(5) Where a holding pattern is established for the missed approach at an intermediate or final approach fix, and a holding pattern is used in lieu of a procedure turn, the MHA for the missed approach must conform to the altitude or descent gradient requirements of paragraph

8-6-7f(1) or (2) above. Missed approach holding must not be established at the FAF for RNAV procedures.

(6) Where a holding pattern is established for the missed approach at an intermediate or final approach fix, and a holding pattern is *not* used in lieu of a procedure turn, establish a conventional procedure turn to permit pilot flexibility in executing a course reversal and descent to final approach fix altitude. The missed approach holding pattern must be situated on the maneuvering side of the procedure turn to permit this to occur. This paragraph is not applicable to RNAV procedures.

g. Alternate Missed Approach.

(1) Establish alternate missed approach procedures (when possible) when the instrument procedure navigation facility for the final and missed approach course differ. Additionally, alternate missed approach procedures may be established when requested by Air Traffic. Do not establish alternate missed approach instructions for RNAV procedures. *Alternate missed approach instructions must not be charted and will either be issued by ATC or specified by NOTAM.* When alternate missed approach instructions are established, they must immediately follow the primary missed approach instructions as a separate entry.

Example:

CLIMB TO 3000 THEN TURN RIGHT DIRECT XUB VOR AND HOLD.

<u>ALTERNATE MA (DO NOT CHART):</u> CLIMB TO 3000 THEN TURN RIGHT DIRECT DD LOM AND HOLD.

(2) The alternate missed approach termination facility/fix and holding pattern must be charted in the planview. If the alternate missed approach termination facility/fix and holding pattern is not already used in the procedure, then add a note in Additional Flight Data.

Examples:

Chart in planview: (facility/fix name).

Chart in planview: ALTERNATE MA HOLDING, HOLD SW DD LOM, RT, 051 INBOUND.

h. NAVAID Outages. When temporary NAVAID outages (planned or unplanned) prohibit the use of the primary missed approach for a procedure, AeroNav Products has the responsibility to ensure an IFR missed approach procedure is published, either on the chart or by NOTAM in the event of lost communications. This does not preclude Air Traffic from issuing alternate climb-out instructions.

8-6-8. Additional Flight Data. When additional information or data is essential to clarify the charting of a procedure or when the procedures specialist wants information charted, but does not want it to appear on the chart as a note, the necessary information/data must be entered in the

Additional Flight Data section. Preface specific items to be charted with the term "Chart." Specific instructions to chart data must be held to a minimum [see also paragraphs 8-2-4b and 8-6-7f].

Note: Do *not* document takeoff obstacles on the Form 8260-9 or in Additional Flight Data.

a. If sufficient space is not available on the form for all necessary data, it may be continued in the Notes section or on Form 8260-10. When necessary to use Form 8260-10, state: "See Form 8260-10."

b. Items such as holding information, restricted area data, final approach course alignment, primary remote automated altimeter setting source, etc., must be retained when amending a procedure.

c. Enter Holding Instructions as follows:

(1) When primary missed approach instructions provide for holding, enter Additional Flight Data as follows: "Hold SE, RT, 313.09 inbound." See paragraph 8-6-7f.

(2) Where alternate missed approach holding is established, enter the description as described in paragraph 8-6-7g(2).

(3) Where arrival holding is operationally advantageous, enter: "Chart arrival holding at PUGGY: Hold SE, RT, 313.09 inbound, 4000."

d. The nonprecision controlling obstacle in the primary and/or secondary area of the FAS must be shown as the FAS Obstacle. In the event a stepdown fix is used in the final approach segment, the controlling obstacle between the stepdown fix and the runway must be shown as the FAS obstacle. If there is more than one FAS obstacle (e.g., LNAV and LP) list both. Enter the obstacle description, elevation in Mean Sea Level (MSL), and location to the nearest second. For a single FAS obstacle or two that are the same, list the obstacle(s) as: "Chart FAS Obst: 317 Tower 364227N/ 0891523W." For multiple FAS obstacles, list the obstacles as: "Chart FAS Obst: 317 Tower 364227N/ 0891523W, 143 Trees 364210N/0891501W."

Note: When the FAS Obstacle is an AAO, do not chart it. Enter the data as follows: "FAS Obst: 529 AAO 365029N/0871234W."

e. To identify certain significant obstacles, other than AAOs, in or near the instrument approach area, include locations and MSL heights under additional flight data. If, in the opinion of the procedures specialist, these obstacles could be critical to flight safety, they should be prefaced by the word "Chart." However, if the data is being furnished only as information, it must *not* be prefaced by the word "Chart." Charting agencies will chart any item marked "Chart." Any item listed without indicating "Chart" will be reviewed by the charting agencies and will be charted if it meets their charting specifications. List obstacles as follows:

"Chart 2674 antenna 372219N/0941657W" or **"2674 antenna 372219N/0941657W."**

f. Obstacles close to a final approach or stepdown fix considered under Order 8260.3 Volume 1, paragraph 289, must be accomplished as follows:

(1) When paragraph 289 is applied to multiple obstacles, document only highest obstacle in the 7:1 (3.5:1 for helicopter procedures) area.

(2) List the obstacle under Additional Flight Data as: "Chart 374 antenna 352416N/ 0881253W." Do not chart if the obstacle is an AAO; document as noted in subparagraph d Note. Do *not* identify it as a "paragraph 289 obstacle." Additionally, make the following entry in the Remarks section of the Form 8260-9: "TERPS 289 applied to 374 antenna 352416N/0881253W."

g. Installed visual aids will be shown on the aerodrome sketch. NASR is the source for this information, which will be obtained and maintained by AeroNav Products for TPP airport sketch charting purposes. Changes are published in the National Flight Data Digest (NFDD).

h. Final approach course alignment, when required, is specified in Additional Flight Data as follows:

(1) For offset (ILS, LOC, LDA, LDA w/GS, RNP, LPV, LNAV, and LNAV/VNAV) approaches document the amount of offset of the final approach course relative to the runway centerline extended as follows:

"Chart Planview Note: LOC offset X.XX degrees" or "Chart Planview Note: Final Approach Course offset X.XX degrees."

(a) For conventional procedures, compute the amount of offset to the nearest hundredth of a degree (0.01) by measuring the difference between the true bearing of the FAC and the landing runway true bearing. True bearing values are as recorded in the Facility Data Record.

(b) For RNAV (GPS) or RNP procedures, compute the amount of offset as specified in Order 8260.58, Volume 6, chapter 4.

(2) To assist charting agencies in the final approach depiction, for approach procedures not aligned on the runway centerline (+/-0.03 degrees), document the final approach course alignment relative to the runway centerline as follows:

"FAC crosses RWY C/L extended 3180 feet from THLD"; or "FAC 450 feet L of RWY C/L extended 3000 feet from THLD." (Left or right as used in the latter case is as viewed by the pilot.)

(3) For circling approaches, document the final approach course alignment relative to the on-airport facility, or to the Airport Reference Point. If the facility is off-airport, enter the point where the FAC crosses the landing surface as follows:

"FAC crosses intersection of RWYs 9-27 and 18-36" or "FAC crosses midpoint of RWY 13-31."

i. When a flight check value is used for the final approach course instead of the plotted radial/course/bearing, add the following: "FAC is a flight check value." See also paragraph 8-6-3c(1)(c).

j. When a procedure planview area encompasses Special Use Airspace (SUA), use the following note as deemed necessary: "Chart P-56."

k. RNAV Data. Publish the following data for RNAV procedures:

(1) For VOR/DME RNAV, enter the reference facility elevation; e.g., "Reference facility elevation XYZ VORTAC 1160."

(2) RNP, LPV, and LNAV/VNAV. Identify the distance to threshold from the lowest DA: "Distance to THLD from 354 HAT: 0.93 NM."

(3) For LPV and LNAV/VNAV. Enter the Route Type(s), Route Type Qualifier(s), WAAS Channel Number, and Reference Path Identifier (Approach ID) using the following example [see paragraph 4-7-10]. For LNAV/VNAV procedures only, there will not be a WAAS Channel Number or Reference Path ID. For agencies providing a complete ARINC packet record on Form 8260-10, Route Type(s) and Route Type Qualifier(s) entries are not required.

ROUTE TYPE: A, R
ROUTE TYPE QUALIFIER 1: J
ROUTE TYPE QUALIFIER 2: S
WAAS CHANNEL #43210
REFERENCE PATH ID: W17A

(4) For LNAV/VNAV. Enter "Chart WAAS Symbol" when it has been determined that a WAAS signal may be unreliable for vertical navigation use.

(5) For WAAS/GBAS procedures, document the Height Above Ellipsoid (HAE) and the reference datum used in calculations. See paragraph 2-11-6b.

l. ASR and/or PAR Approach Availability. When ASR and/or PAR approaches are published for the airport, enter the following: "Chart: ASR" or "Chart: ASR/PAR" – as appropriate.

m. Magnetic Variation. Except as provided in paragraph 8-2-3, enter the magnetic variation value upon which the procedure design and documentation is based.

(1) For non-RNAV SIAPs, enter the officially assigned variation value of the facility providing final approach course guidance.

(2) For all RNAV SIAPs, see paragraph 2-5-3f(2).

n. Enter the Epoch Year of the variation value as designated by the AeroNav Products [see paragraph 2-5-2]. Enter this value in 4 digits:

EPOCH YEAR: 2000

o. For Copter PinS procedures that serve more than one landing area and are noted to "Proceed VFR," list available landing areas, facility identifier, landing area elevations, the courses in hundredths of a degree, and distances from the MAP in hundredths of a mile as follows:

East 34th Street Heliport, 6N5, 10, 257.02/13.81
Port Authority-Downtown-Manhattan Wall
Street Heliport, JRB, 7, 246.03/15.51

p. For Copter PinS procedures that have obstacle penetrations identified in the VFR Transition Area surface evaluation, those obstacle penetrations that exist outside the OCS-1 and OCS-2 areas, but are within the OIS area (see Order 8260.42, chapter 5), these obstacles must be annotated on the chart; e.g., "Chart 2674 antenna 372219N/0941657W."

q. Where a VDP is established on a SIAP, identify the location of the VDP as follows:

(1) Non-RNAV: Specify the VDP DME fix and distance to threshold.

Chart VDP at _____DME;
Distance VDP to THLD_____miles.

Note: If the VDP is for a localizer procedure on an "ILS or LOC" approach plate, indicate the VDP as applicable to LOC Only.

Chart VDP at _____DME*;
Distance VDP to THLD_____miles.
*LOC only

(2) RNAV and LNAV: Indicate the VDP distance to MAP.

Chart VDP at ____miles to RW16.
Chart VDP at ____miles to SUSIE.

(3) RNAV/VNAV: Indicate the VDP as applicable to LNAV only.

Chart VDP at _miles to RW16*
* LNAV only.

r. Enter charting instructions for maximum or mandatory altitudes; e.g., "Chart mandatory 5000 at DAVID."

Note 1: Maximum or mandatory altitudes should be avoided where possible, especially in the final approach segment. Maximum, mandatory, or block altitudes in the final or missed approach segment requires Flight Standards approval from AFS-400 through AFS-460, prior to forwarding for publication.

Note 2: Until such time formal obstacle clearance criteria has been established to address maximum, mandatory, or block altitudes, a waiver will also be required when applying this to the missed approach segment.

s. Vertical Descent Angle (VDA)/TCH.

(1) For straight-in aligned nonprecision SIAPs (except for procedures that already have a GS/GP angle established for the vertically guided procedure on the same chart and surveillance (ASR) approach procedures), enter the descent angle for the appropriate fix in the final approach segment, and the appropriate TCH: NIXON to RW15: 3.26/55. Where straight-in minimums are not authorized due to an excessive descent angle, enter the straight-in descent angle (may exceed maximum when compliant with circling descent angle). Where the VDA values are not coincident with published VGSI values, see paragraph 8-6-6n. Only one angle and TCH will be published on the chart. Do not publish a VDA/TCH when Flight Inspection has requested that one not be established due to an obstacle that would require an aircraft to deviate from its vertical flight path prior to reaching the TCH.

(2) For Copter PinS procedures, except those annotated "proceed VFR…" enter the visual segment descent angle (VSDA) (to the hundredth of a degree) from the specified descent point (MAP or ATD after MAP) to a specified hover height (20-foot maximum) which is known and documented as a Heliport Crossing Height (HCH). Data entry format:

(MAP Name) TO HELIPORT: 7.30/5 feet HCH or 0.2 NM after (MAP Name) TO HELIPORT: 7.50/20 feet HCH.

Note: Except for Copter procedures to runways, do not publish vertical descent angle data from FAF to MAP.

t. Computer Navigation Fixes (CNF). Enter charting instructions for CNFs; e.g., "Chart (ABCDE) at intersection of (name) DR leg and intermediate course."

u. Arc IAFs. Enter the radial that defines the beginning of the arc initial segment; e.g., "Chart ABC R-060 at WERNR."

v. Ceiling requirements. When the ceiling value is restricted by Order 8260.3, enter the applicable ceiling value to be charted; e.g., CHART CEILING: S-ILS 300.

w. DME Facility. When a DME is used and is not associated with the facility providing final course guidance and station passage occurs within the final segment, the facility must be shown in the profile view; e.g., "Chart in profile view: I-XYZ DME antenna" or "Chart in profile view: ABC VOR/DME."

x. Circling Icon. Document that the Circling icon must be charted when Order 8260.3, new circling criteria has been applied as follows: "Chart Circling icon." See paragraph 8-7-1d(12) for Form 8260-9 documentation.

y. Secondary Airports. When there is another airport(s) in the vicinity of the final approach course that may be confused with the airport to which the approach is designed, request the airport be depicted in the plan and profile views of the procedure chart; e.g., "Chart (airport 4-letter ID) in plan and profile views."

8-6-9. Lower Blocks.

a. City and State. Enter associated city and state name as derived from NASR. Use the official two-letter state abbreviations.

b. Elevation/TDZE/Airport Name.

(1) Enter the official airport/heliport name and airport/heliport elevation as derived from NASR. For Copter PinS procedures noted to "proceed VFR" to the landing site, revise "Elevation" and "TDZE," and enter "Surface Elevation." Then enter the highest terrain/surface elevation within a 5200-foot radius of the MAP. For a Copter PinS instrument approach procedure serving multiple heliports, enter the name of the primary heliport and list each heliport in the Additional Flight Data Block.

Note: Paragraph 8-6-8o also requires each heliport to be identified in the Additional Flight Data Block.

(2) Enter Touchdown Zone Elevation (TDZE) [as stated in the AMIS/IAPA database] for the runway designated in the procedure title. Enter the sidestep runway and TDZE, if applicable, below the first entry; e.g.,:

TDZE: 28L 2854
TDZE: 28R 2858

Leave the TDZE blank if straight-in minimums are not authorized or if the procedure is a Copter PinS procedure [see paragraph 8-6-8p].

c. Facility Identifier. Enter facility identification. On procedures predicated on proposed facilities and when an identification has not been assigned, leave this space *blank* and NFDC will enter the identification. For VOR/DME RNAV procedures, enter the identification of the SIAP reference facility. For RNAV or FMS procedures, insert RNAV or FMS as applicable.

d. Procedure No. Enter procedure identification as determined by Order 8260.3 and paragraph 8-2-2 of this order.

(1) When DME is required for the final approach, include "/DME" as part of the identification; e.g., VOR/DME, LOC/DME, LDA/ DME, NDB/DME.

(2) For RNAV (or FMS for which GPS is required) procedures, use RNAV (GPS) RWY 22.

(3) When a procedure also contains CAT II/III minima or SA CAT I/II minima, include the name of the additional procedure(s).

Examples:

ILS or LOC/DME RWY xx, Orig
ILS RWY xx (CAT II) ILS RWY xx (CAT III)

ILS or LOC RWY xx Orig
ILS RWY xx (SA CAT I) ILS RWY xx (SA CAT II)

ILS or LOC RWY xx Orig
ILS RWY xx (SA CAT I)

ILS or LOC RWY xx Orig
ILS RWY xx (SA CAT I) ILS RWY xx (CAT II)

ILS or LOC RWY xx Orig
ILS RWY xx (SA CAT I) ILS RWY xx (CAT II) ILS RWY xx (CAT III)

(4) When a procedure contains "PRM" in the title (e.g., ILS PRM RWY 30L), on the line below it, include the text "Simultaneous Close Parallel" in parenthesis.

Example:

ILS PRM RWY 30L
(SIMULTANEOUS CLOSE PARALLEL)

(5) When an instrument procedure has been designed to support "Converging" operations, on the line below the procedure title, include the text "CONVERGING" in parenthesis.

Example:

ILS Y RWY 31R
(CONVERGING)

e. Amdt No.: Enter "ORIG" or "AMDT" with the applicable amendment number/letter. The amendment number must be advanced or the alphabetical suffix added/advanced whenever the procedure is revised. The type of revision will determine whether an amendment may be made or whether the procedure must be canceled and an original established (see paragraph 8-3-4).

f. Effective Date. The effective date of the procedure will normally be entered by AeroNav Products. Due to the heavy workload associated with the 56-day airspace charting dates, AeroNav Products will normally schedule routine procedure amendments for charting dates commensurate with NFDC and AeroNav Products workload. When an effective date is required which is earlier than can be routinely assigned by NFDC, AeroNav Products, and Aeronautical Information Management Group (AIMG) must coordinate with NFDC to determine the appropriate course of action to expedite publication.

(1) Original Procedures. The effective date of original procedures must be in accordance with Order 8260.26; except that the 28-day change notice will not be published for Alaskan or Pacific procedures or for procedures that require en route charting changes.

(2) Routine Amendments. Routine amendments to SIAPs are made effective based on the time required to process and distribute the SIAP, plus the time required for charting and distribution to subscribers. Procedures that contain an en route fix name change or re-identification must be made effective on the 56-day cycle charting date, to coincide with the publication of en route charts. Amendments to procedures pending flight inspection must be held by AeroNav Products until the flight inspection is complete.

g. Sup:/Amdt:/Dated:

(1) Sup: Enter the identification of the superseded procedure if the name has changed.

(2) Amdt: If the procedure is original, enter “None”; otherwise, enter “Orig” or amendment number as appropriate.

(3) Dated: If the procedure is original, leave *blank*; otherwise, enter previous amendment date.

Section 8-7. Standard Instrument Approach Procedure Data Record, FAA Form 8260-9

8-7-1. Preparation of Form 8260-9. The Standard Instrument Approach Procedure Data Record, Form 8260-9, must be prepared in accordance with the instructions below for each instrument approach procedure developed by AeroNav Products or non-Federal procedure developers. The form is designed as a supporting document for the approach procedure. It serves as a checklist for the procedures specialist, as a technical reference for the flight inspector, and provides a permanent record of data currently available at the time of procedural development.

a. Airport and Procedure Data. Enter the airport name and location identifier (ICAO, if available). Enter the procedure name and if the procedure is an original, enter "ORIG" or if an amendment, enter "AMDT" with the applicable number. Enter the associated city and state name derived from AIRNAV. Use the official two letter state abbreviation, followed by the airport elevation as specified in the Report Format Form 8260-3/5/7A. For facility, enter identification and type; for VOR/DME RNAV procedures, enter the identification of the SIAP reference facility. For RNAV or FMS procedures, insert RNAV or FMS as applicable.

b. Part A: Obstruction Data.

(1) Segments. Identify each Terminal Arrival Area (TAA), Feeder, Hold-In-Lieu of Procedure Turn, Initial, Intermediate, and Final segment, and stepdown fixes therein. If the segments are associated with an RNP, the RNP values must be included. Example: (RNP 0.15), (RNP 1.00), etc. If the IF is also an initial approach fix, identify the IF with "(IF/IAF)" in the "From" column. For precision approaches which have separate intermediate and final segments for the precision and nonprecision approaches, identify all: Intermediate: ILS and Intermediate: LOC; Final: ILS and Final: LOC. Identify the primary missed approach segments (and alternate missed approach segments, when established).

(2) From/To. Enter segment start/end points, including stepdown segments, as listed in the Terminal Routes section of Report Format Form 8260-3/5/7A. Enter the PT completion distance in the "From" column opposite the intermediate or final segment, as appropriate. Enter RWXXX in the "To" column for the final/stepdown segments. Enter "GP Intcp" (or PFAF name if established) in the "From" column and "RWXXX" in the "To" column for vertically guided procedures (even though the missed approach begins at the DA). Enter the Hold-in-Lieu-of-PT facility/fix in the "From" column, and the holding template number from the controlling obstacle information of the Form 8260-2 for the Hold-In-Lieu of PT facility/fix in the "To" column. Enter segmented RNP missed approach, when applicable.

(3) RNP. Enter the RNP value, when applicable.

(4) Distance. Enter the distance as listed in the Terminal Routes section of Form 8260-3/5/7A.

(5) PAT. Enter holding template number for the Hold-In-Lieu of PT facility/fix.

(6) MAP/HAT/HMAS. When the final segment information is provided, entries will include the missed approach point location, height above touchdown, and the starting elevation

of the missed approach surface. When a procedure contains multiple lines of minimums, list each final segment independently with the MAP/DA associated with the lowest minimums first. Enter the HAT followed by the starting elevation of the missed approach surface(s) (HMAS) for each listed MAP and/or DA (for a DA that would be at the starting elevation at the A-B line).

(7) Obstruction. Select the controlling obstruction as directed by chapter 2, section 2-11, Obstacle Data. Enter controlling obstruction type (tower, trees, terrain, AAO, etc.) and state obstacle number, if available, within each approach segment on one line. Enter segment (except final) highest terrain data on the next line. Number obstruction entries sequentially as they appear on the form. For obstructions or terrain common to other segments, enter only the number from the "obstruction" column for each subsequent repetition, leaving the "coordinates" column blank, but completing remaining column entries.

(8) Coordinates. Enter coordinates in degrees, minutes, and seconds to the hundredth; e.g., 411532.01N/0943028.09W.

(9) Elev. MSL.

(a) Enter the controlling obstacle/terrain MSL elevation followed in parentheses by the appropriate accuracy code. Any required altitude adjustment due to accuracy code application is shown in the "Adjustments" column.

(b) Enter the highest terrain elevation used for airspace evaluation to the nearest foot, followed in parentheses by that value rounded to the nearest 100 feet; e.g., 249 (200). See paragraph 5-2-4b. Do *not* assign an accuracy code to terrain used for airspace evaluation.

(10) Horizontal and Vertical Accuracy adjustments. Enter the appropriate data; e.g., 50 20.

(11) Accuracy Code (AC). Enter the accuracy code used, when applicable.

(12) Enter required obstruction clearance (ROC) for each segment. For precision PA and APV approaches where the OCS is clear, enter "ASC" (All Surfaces Clear). Where the DA is based on an OCS penetration, enter the slope penetrated; e.g., 34:1. For RNAV (GPS) LNAV/VNAV approaches where the DA is based on a FAS level surface (obstacle exclusion area) penetration, enter the ROC associated with the fastest aircraft category on the chart. Document obstacle penetrations per paragraph 8-7-1b(7).

(13) Climb Gradient (CG). Enter the CG value, when applicable.

(14) Climb Gradient Termination Altitude (CGTA). Enter the climb gradient termination altitude, when applicable.

(15) Adjustments. Do *not* enter additives required for rounding purposes. State only the reason for and amount of adjustment, rounded to the next higher foot [see paragraphs 2-11-3a and b]. The following codes should be used: RA - remote altimeter; AS - airspace; AT -air traffic; AC - accuracy code; CA - cardinal altitude; SI - straight-in minimums; XL - excessive length of final; PR - precipitous terrain; HAA - circling minimum HAA; MA - missed approach;

MT – mountainous terrain; PT - procedure turn; DG - descent gradient; GS - glide slope; HT – minimum HAT; MEA - minimum en route altitude; MAH - missed approach hold; SA - secondary area (also X/Y surfaces, transition areas); VEB – Vertical Error Budget. Enter the adjustment amount for all codes except SI and HAA. Use XP to refer to the remarks section for items not covered in this paragraph. For example: AC50, SA-27, AS1500, etc. If necessary explain the code used in Part C - Remarks. For precision or APV approaches, where obstacles require a glide slope higher than three degrees, enter GS but exclude the amount of adjustment.

(16) Min. Alt. The obstruction elevation + ROC + altitude adjustment = minimum altitude (computed); OR, high terrain elevation + airspace adjustment = minimum altitude (computed). Enter the appropriately rounded value. Make entries on the obstruction line as well as the airspace evaluation line. When possible, separate sets of segment entries with a blank line. The segment minimum altitude to be published must be the higher rounded value, and must match the respective altitudes shown on the corresponding Report Format Form 8260-3/5/7A. For part-time remote altimeters, make entries in the final/stepdown "Alt. Adj." and "Min. Alt." columns on a separate line just below the entries for full-time altimeter. The minimum altitude values for nonprecision final/stepdown and circling must be rounded to the next higher 20-foot increment. For precision or APV approaches, enter DA and HAT/HAL values separated by a "/"; e.g., 1718/200, 1640/383, etc.

(17) DVEB. Enter, when applicable, the distance from the landing threshold point (LTP) to the vertical error budget obstacle clearance surface (OCS) origin.

(18) VEB OCS. Enter, when applicable, the slope of the OCS.

(19) RF Center or TF Fix/Distance. Enter, when applicable, the RF center fix name and distance.

(20) TF/RF Calculations. The calculation values will be entered on this line for each and the variables used [Where ALT=Altitude; KIAS=Knots Indicated Airspeed; KTAS= Knots True Airspeed; HAA=Height Above Airport; VKTW=Velocity Knots Tailwind; TR=Turn Radius (NM), and BA = Bank Angle]. Attach a copy of the VEB spreadsheet(s) [PFAF calculations, course change, DVEB, VEB OCS origin and slope, Temperature limits, and VEB ROC] used to develop the procedure.

Examples:

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE
CUKLI-LICIP	4000	250	270.21	3985.20	60.00	4.20	19.72			2417.35	20.99:1	(ZEXAX)/6.70NM

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE
KINGR	4792	230	252.04	3543.20	55.43	4.25	18.00	4597.68	21.78			

(21) Segment Remarks. The portion can be used to describe such things as speed restrictions, coordinates for RF center points, etc.

(22) Missed Approach. The missed approach point (MAP) or DA for precision/APV approaches will be identified in the "FROM" column. Enter the clearance limit in the "To" column. When more than two lines of minimums are present, or when the missed approach

consists of more than one segment, then list each segment of the missed approach separately. For example, a missed approach in the form of "Climb to 2000, then climbing left turn to 3000 heading 260 and PWA-216 to JESKE and hold" consists of three segments which include (1) MAP to 2000 MSL, (2) 2000 MSL to PWA R-216, and (3) PWA R-216 to JESKE. Annotate segments common to all lines of minimums only once. Elaborate in Segment Remarks, if necessary. See paragraph 8-6-9b(1) thru (20) for data entry fields.

(a) When there are multiple controlling obstacles in the missed approach segment (e.g., to support a missed approach climb gradient), specify all controlling obstacles by type, coordinates, elevation and accuracy code. Document the controlling obstacles to include the obstacle requiring the highest climb gradient and the obstacle which controls the climb gradient termination altitude (if different). Document the highest obstacle (and adjustments) used to determine the preliminary missed approach altitude. For multiple segments, document the highest obstacle/adjustments in the primary area, or highest equivalent obstacle/adjustments in the secondary area, for each segment of the missed approach. Document the highest terrain within the primary area for each segment of the missed approach.

(b) Enter "ASC" in the "ROC" column when the 40:1 OCS surface is not penetrated. If it is penetrated and a non-standard climb gradient has been applied, enter "CG" followed by the OCS slope (e.g., "CG/32:1"). Enter the clearance limit altitude in the "MIN ALT" column. Enter any additional comments in Segment Remarks, if necessary.

(23) Circling. Enter the circling data for each category of aircraft authorized by the procedure. Enter controlling obstacle to include obstacle number, coordinates to the hundredth of a second. Document the variable turn radii values used to the nearest 0.01 NM. When establishing the height above the airport (HAA), the straight-in MDA, or the circling ROC may determine the minimum circling altitude. When the minimum circling altitude has been determined, enter the resulting HAA in the "HAA" block. If two HAAs are available, enter both HAAs separated by a "/." Enter obstacle elevation MSL followed by the horizontal and vertical accuracy then the appropriate accuracy code. Enter ROC to the nearest foot. When HAA controls the circling minimum altitude, enter "HAA" in the "Adjustments" column; when the straight-in MDA controls the circling minimum altitude, enter "SI." Enter other adjustment codes and amounts as appropriate. Enter only the published minimum altitudes to the next higher 20-foot increment. If use of a remote altimeter requires a higher minimum circling altitude, enter both values separated by a "/" (or only the remote altimeter value, if applicable). Enter circling remarks as needed.

(24) MSA. Identify the runway number (e.g., RW36) for RNAV procedures without a TAA, NAVAID or fix used as the Minimum Sector Altitude (MSA) "center" point; define the "sector" boundaries when permitted by criteria. If a "common safe altitude" is established, define only one sector (360 degrees - 360 degrees) and only the one controlling obstacle. Identify obstructions by type (e.g., tower, trees, etc.), geographical coordinates, elevation MSL, their location by reference to bearing (magnetic) and distance (nearest 0.1 NM) from the center point for each sector required obstacle clearance, followed by the horizontal and vertical accuracy then the appropriate accuracy code, and ROC. Enter any adjustment and the resulting MSA in the "MIN ALT" block in hundreds of feet. Leave blank for RNAV procedures incorporating a TAA. Enter MSA remarks as needed.

c. Part B: Supplemental Data.

(1) Communications With. Identify the facility or facilities providing approach control and terminal service to the airport. If no full-time or part-time control tower, include the associated FSS. Flight inspection reports are the source for the primary frequency bands in which satisfactory communications are provided. For clarity, facility identification should agree with those used in the Airport/Facility Directory (AFD).

(2) Weather Service/Back-Up Weather Service. Enter automatic weather reporting system(s) used to include level for AWOS. Enter the location(s) by airport identifier for the weather source(s). Enter the hours of operation: (if part time weather service use numerical hours of operation e.g.; 0500-1800).

(3) Altimeter Source/Back-Up (B/U) Altimeter Source. Identify by airport identifier the altimeter setting source(s). If an altimeter setting is derived from a remote source, indicate the distance to 0.01 NM. Enter the number of clock hours of remote service. Enter "Yes/No" whether the weather source is on Service A. Enter the resulting altitude adjustment (ROC increase) value rounded to the next higher whole foot increment. This value is used in the "Adjustments" column in Part A, as appropriate. Enter in "Weather Remarks," whether pressure patterns are the same, or not, the Airport Identifiers and Field Elevations when pressure patterns are the same, or High and Low Terrain values when pressure patterns are not the same, and the raw remote altimeter adjustment.

Example:

RASS pressure patterns same
KOMA 984, KMLE 1050
RA = 36.3
RASS pressure patterns not the same
High Terrain 1634, Low Terrain 323
RA = 210.6

(4) Primary NAVAID/Secondary NAVAID. Identify the primary NAVAID (facility providing final approach guidance) and the location providing CAT 1 monitoring service. Enter the number of hours per day for CAT 1 monitoring service, and CAT 3 monitoring service at part-time monitoring points. For GPS or RNAV or non-VOR/DME RNAV, leave blank. For VOR/DME RNAV, enter the Reference Facility 3-letter ID.

(5) Approach and Runway Lighting. Identify all runways with the available approach, runway, and visual glide slope indicator (VGSI) lighting used. Enter VGSI types, i.e., VASI, PAPI, etc. Enter "(PCL)" when pilot controlled lights are available.

(6) Runway Markings. List all runways with serviceable/non-standard runway markings. Place "BSC," "PIR" and "NPI" in front on runway markings (ex. PIR-G, NPI-Faded).

(7) Runway Visual Range. List each runway visual range (RVR) systems.

(8) Glidepath Angle/Elevation Runway Threshold/Threshold Crossing Height/Centerline Elevation Abeam Glideslope/Distance from Runway. Provide GS/GP information as indicated for all precision and APV procedures to the following accuracy: GS/GP angle – nearest .01 degree; elevation RWY THLD and abeam GS/GP Ant – nearest 0.1 foot.; TCH – nearest 0.1 foot.; distance THLD to GS/GP Ant – nearest foot; VASI – angle to the nearest .01 degree and TCH to the nearest foot. These values must agree with the approved database.

(9) Final Approach Course Aiming/Threshold Displaced. Identify the desired approach course aiming point as determined by the procedure construction. Normally this will be the runway threshold or a point on the runway centerline extended at a specified distance from the threshold. Check either blocks on any precision or APV approach, or where the FAC is directly aligned to the runway threshold. For distances, from thresholds between 3000 feet and 5200 feet, enter the specific value. For those final approaches that parallel the runway centerline extended or intersects the centerline more than 5200 feet from the threshold, specify the distance between the FAC and the RCL extended at a point 3000 feet from the LTP measured perpendicular to the RCL. For circling or point-in-space alignment, explain in Part C: General Remarks

(10) Critical Temperature. For RNAV (GPS and RNP) Baro-VNAV procedures, enter the results of Critical Temperature computations (see paragraph 4-7-8). The descent rates at standard temperature and high temperature must be entered in the Critical Temperature Remarks section. Use standard entry: "Descent Rate: Standard Temp 974 High Temp 1126." Enter additional Critical Temperatures Remarks as needed.

Example:

CRITICAL TEMPERATURES

CRITICAL LOW	CRITICAL HIGH	ACT	APT ISA
-21C (-5F)	+43C (109F)	-23.72C	+9.05C

(11) Visual Portion of Final Penetrations. Document Order 8260.3, Volume 1, chapter 3, "Visual Portion of Final" penetrations. Document 20:1 penetrations first, followed by 34:1 penetrations as applicable. For an obstacle that penetrates the 20:1 surface, do not repeat the documentation process for the 34:1 surface (i.e., 20:1 penetrations automatically penetrate the 34:1 surface). Include the obstacle MSL elevation, obstacle type and ID (if applicable), coordinates, and amount of penetration to the 0.01 of a foot, starting with the greatest penetration in descending order. For Multiple final segments, if penetrations exist, document each Segment e.g., LPV, LP, LNAV/VNAV, and/or LNAV. Use standard entry:

Order 8260.3, Volume 1, "Visual Portion of Final" penetrations:

LPV and LNAV/VNAV:

20:1 5345 TREE (KSUN0092) 432931.65N/1141713.21W (43.57)
5342 TREE (KSUNT037) 432930.08N/1141710.91W (30.03)

34:1 5337 TREE (KSUN0081) 432927.26N/1141702.79W (27.89)

LNAV:

20:1 5343 TREE (KSUN0091) 432932.65N/1141712.21W (42.57)
5340 TREE (KSUNT039) 432931.08N/1141711.91W (28.03)

34:1 5335 TREE (KSUN0081) 432928.26N/1141703.79W (25.89)

Note: For RNAV (RNP) procedures include the horizontal/vertical obstacle accuracy values. The amount of penetration *includes* obstacle accuracy.

20:1 5345 TREE (KSUN0092) (20/2) 432931.65N/1141713.21W (46.07)
5342 TREE (KSUNT037) (50/20) 432930.08N/1141710.91W (51.19)

34:1 5337 TREE (KSUN0081) (20/2) 432927.26N/1141702.79W (30.51)

(12) Document Helicopter "Visual Portion of Final" or "Proceed VFR" penetrations. Document "Visual Portion of Final" penetrations and/or "Proceed VFR" obstacle(s) that penetrate the 5280-foot obstacle assessment area. Include the obstacle MSL elevation, obstacle type and ID (if applicable), coordinates, and amount of penetration to the 0.01 of a foot, starting with the greatest penetration in descending order. See paragraph 2-11-5a for additives and exemptions. Use standard entries:

Visual Portion of Final Penetrations:

5345 TREES (KSUN0092) 432931.65N/1141713.21W (43.57)

5342 TREE (KSUNT037) 432930.08N/1141710.91W (30.03)

and/or

5280-FOOT "PROCEED VFR" SEGMENT LEVEL SURFACE AREA PENETRATIONS:

5345 TREES (KSUN0092) 432931.65N/1141713.21W (43.57)

5342 TREE (KSUNT037) 432930.08N/1141710.91W (30.03)

5337 TREE (KSUN0081) 432927.26N/1141702.79W (27.89).

d. Part C: General Remarks. Use this space to amplify previous entries (state associated part number for reference), or to record essential data not considered elsewhere on the form. Also see paragraphs 4-31, 8-6-3c(1)(c), and 8-6-8f.

(1) State the effect, if any, of waivers to published minimums.

(2) For VOR/DME RNAV SIAPs, enter the MA fix XTRK error.

(3) Enter the amount of threshold displacement, if any.

(4) When flight inspection establishes a final FAC other than the plotted magnetic course, enter:

"Plotted FAC is 087.43 M."
"Electronic flight inspected FAC is 089 M."

(5) Enter a reason when a VDP has not been established: e.g., "VDP NOT ESTABLISHED – Obstacles penetrate 20:1 surface."

(6) Enter a statement indicating the precipitous terrain evaluation has been completed: "PRECIPITOUS TERRAIN EVALUATION COMPLETED." This will be done even if adjustments are required and entered in Part A. Additionally, when the precipitous terrain is identified in a Feeder Segment located in designated mountainous terrain areas, ROC reductions (see Order 8260.3) are not authorized. Document as follows:

"Feeder Segment (Fix Name) to (Fix Name) terrain identified as precipitous; ROC reductions not authorized/2000-foot ROC Required."

(7) Enter indicated airspeed(s) (IAS) used to calculate RF turn radius for RNP procedures <u>if other than standard</u>; e.g., Max speed FONVI to JUBOL – 140 KIAS.

Note: When this speed is less than the maximum allowed by criteria, a note must be placed on the chart to inform the pilot. See paragraph 4-7-10j for charting instructions.

(8) Document nonstandard tailwind component used in helicopter missed approach and departure calculations (see Order 8260.42, chapter 2); e.g., NONSTANDARD TAILWIND COMPONENT USED – 40 KNOTS.

(9) Document nonstandard bank angle used in helicopter calculations (see Order 8260.42, chapter 2); e.g., NONSTANDARD BANK ANGLE USED – 18 DEGREES.

(10) Document route width reductions used in helicopter GPS or WAAS procedures (see Order 8260.42, chapter 2); e.g., ROUTE WIDTH REDUCTION KLING TO GENNE – 1.5 NM PRIMARY; 0.5 NM SECONDARY.

(11) Document the height above the heliport/airport or height above surface when a turn at an altitude for the Missed Approach is less than 400 feet. AGL; e.g., MA TURN BEGINS 250 FT ABOVE HELIPORT (or SURFACE, or AIRPORT).

(12) Document that Order 8260.3, Volume 1, chapter 2, new circling criteria has been applied as follows: "Order 8260.3, Volume 1, chapter 2, New Circling Criteria Applied."

e. Part D: Airspace. Enter airspace data required by paragraph 5-2-4k. Carry this information forward until amended. Alternatively, this information may be entered on any acceptable format for provision of airspace data to ATC. This form must document *all* the data requirements of paragraph 5-2-4k.

f. Part E: Prepared By. Enter the name and title of the AeroNav Products specialist or non-Federal developer responsible for preparing the data record; the date prepared; and the originating office.

g. Instrument Approach Procedure Graphic. A graphic sketch of the plan and profile views of the approach procedure and the operational minimums as envisioned by the procedures specialist must be depicted on a separate 8 ½" x 11" sheet. This graphic presentation becomes part of AeroNav Products file. It assists the cartographer in visualizing the desired IAP layout; and is required to test the validity of the narrative procedure and to uncover any potential charting problems prior to formal publication.

h. Distribution. Retain completed copies of the Form 8260-9 with the associated SIAP and distribute as defined in table 8-3-2.

Section 8-8. Completion of FAA Forms 8260-4/7/10

8-8-1. General. This section contains information applicable to the completion of Forms 8260-4/7/10. Basic guidance on the completion of these forms is covered in section 2 and only items which differ from that guidance are contained in this section.

8-8-2. Form 8260-4, Radar. Instructions for completion of Forms 8260-3/5/7A/10 are also applicable to Form 8260-4, except as follows:

a. Radar Terminal Area Maneuvering Sectors and Altitudes. When an MVA chart for these areas has been approved for ATC use by AeroNav Products, do not repeat this data on the Form 8260-4. In such cases, enter a note describing the source of the data as follows:

"As established by the current Macon ASR Minimum Vectoring Altitude Chart."

(1) Where the MVA at the FAF is equal to/less than the FAF altitude, document the final segment on Form 8260-9 [see also paragraph 8-8-2d(1)].

(2) Where the MVA at the FAF or at fixes preceding the FAF is greater than the FAF altitude, document those segments prior to the FAF on Form 8260-9 [see also paragraph 8-8-2d(2)].

b. Radar Missed Approach Point and Missed Approach Instructions. A missed approach point and missed approach instructions must be provided for each runway authorized radar straight-in landing minimums. A missed approach point and missed approach instructions must also be provided when only circling minimums are authorized. This data should be included in the missed approach section of Form 8260-4. When feasible, provide a non-radar missed approach procedure. If sufficient space is not available, only the missed approach point data should be included and the missed approach instructions placed in the Notes section or on Form 8260-10 continuation sheet.

c. Approach Minimums. PAR and/or ASR minimums section must be completed as specified in paragraph 8-6-5. PAR w/out GS minimums may be established where necessary.

d. Radar Notes.

(1) Establish a FAF, minimum altitude (glidepath intercept altitude for PAR), and final approach course for each runway for which radar procedures are established. Runway designation may be omitted if only one runway has a radar approach.

(2) For ASR, provide recommended altitudes for each mile on final, but not below the lowest MDA.

Example Form 8260-4 entry:

"RWY 17: FAF 7.8 miles from threshold (at LACKI OM), minimum altitude 9000; minimum altitude 3 mile fix 7300; final approach course 168. Recommended altitude: 7 miles 8720; 6 miles 8360; 5 miles 8000; 4 miles 7660; 3 miles 7300; 2 miles 6920."

(3) When segments prior to the FAF are required, establish the fixes and minimum altitudes in a note preceding the note cited above: "9.4 miles from threshold, minimum altitude 9000."

(4) Define the final approach course in the Notes section when circling is the only minimum authorized: "FAF 6 miles from runway intersection, minimum altitude 8000; final approach course 060 aligned to intersection of Runways 2 and 15."

(5) If radar availability is limited, use standard note: "When control tower closed, ASR NA." (This is a radar SIAP note only - not to be used on other SIAP types.)

(6) Lost communications instructions must be entered as follows: "As directed by ATC on initial contact."

e. Additional Flight Data.

(1) Enter the TDZE in the preprinted area for each runway authorized straight-in minimums.

(2) Indicate the FAS obstacle for each runway having straight-in minimums or a circling-only approach.

(3) Enter the GS angle, TCH, and distance from RWT to RPI in feet for PAR approach procedures.

(4) Enter the facility magnetic variation and Epoch Year as obtained from AeroNav Products.

f. Lower blocks. Data must be the same as Forms 8260-3/5/7A [see paragraph 8-6-9] except as follows:

(1) Facility Identifier. Enter the identifier of the controlling facility and the type of radar; e.g., "COS ASR," "TBN ASR/PAR."

(2) Procedure Number. Radar procedures must be numbered in sequence; e.g., "Radar 1, Radar 2, etc." Runway numbers must be shown in the minimums section.

8-8-3. Form 8260-7A and Form 8260-7B.

a. See Order 8260.60, for Special procedure development, approval, and processing instructions.

b. Completing Form 8260-7A. Instructions for completion of Forms 8260-3/5/10 are also applicable to Form 8260-7A, except as follows [see paragraphs 8-6-5m(10)]:

(1) If a newly established fix is required for the Special procedure, the fix must be documented on a Form 8260-2 and processed in the normal manner (see paragraph 8-5-2). The

FPT must provide a copy to the user. When an existing fix will be used for a Special instrument procedure, the current Form 8260-2 for that fix must be updated to reflect current fix use (see paragraph 8-5-2j).

(2) IFR Departure Procedure/ Takeoff Minimums. At locations where there are no public or existing Obstacle Departure Procedures (ODP) established and TERPS evaluation reveals that standard takeoff minimums cannot be authorized, an ODP must be established. A special ODP and/or SID must be documented on the appropriate 8260-15 series form under the latest edition of Order 8260.46. The Form 8260-7A for the approach procedure will indicate the need to "See Form 8260-15A for this airport," so a Form 8260-15A must accompany the approach procedure when charted and/or disseminated. If a public SIAP exists for the airport, the published public ODP, if one was required, applies.

c. Completing Form 8260-7B. This form will accompany all Special instrument procedures and be incorporated as an amendment to the operations specifications of the certificate holder. The form may also be issued with a Letter of Agreement (LOA) to Part 91 operators. A separate Form 8260-7B is required for issuance of each Special ODP and/or SID. The requirements documented on this form will be developed by AFS-410/470 and approved by AFS-400.

d. Approval.

(1) For procedures developed by and quality reviewed by the FAA, the person who developed the procedure signs the original Form 8260-7A in the "Developed by" section. The "Recommended by" section must be signed by AeroNav Products/Division Manager or their designated representative. Forward the completed form to AFS-400 for final approval.

(2) For procedures developed by non-government sources, the person who developed the procedure signs the original Form 8260-7A in the "Developed by" section. The "Recommended by" section must be signed by the AFS-460 Manager. Additionally, see guidelines established in Order 8260.60.

e. Printing and Distribution. The regional Flight Standards Division must provide for reproduction of the special procedure forms and must provide copies in accordance with the following recommended distribution. Modify intra-regional distribution as required:

(1) Principal Operations Inspector for the air carrier or air taxi operator with additional copies to the FSDO having jurisdiction over the airport of concern.

(2) For other operators, copies to the requesting user through the associated FSDO.

(3) Applicable Service Area.

(4) Air Traffic facility exercising control at the airport of concern.

(5) ALPA/APA if intended for air carrier use.

(6) Courtesy copy to cartographic agencies that may request copy service.

(7) National Flight Data Center, AJV-21.

(8) AeroNav Products/procedure developing organization.

(9) Airport Manager.

f. Radar Special Procedures. If there is a requirement for a radar special procedure, use Form 8260-4 in lieu of Form 8260-7A. Delete reference to Part 97.31 and add the word "Special." Use the Form 8260-7B to document the approval and to provide for incorporation in the Operations Specifications.

g. Limitations on the Use of Special Procedures.

(1) Where a special procedure requires the use of private facilities, e.g., landing area or navigational facility, the following statement must be added in the "Notes" section of the Form 8260-7A restricting the use of that procedure: "Chart Note: Use of [name of private facility] requires permission of the owner; use of this procedure requires specific authorization by FAA Flight Standards."

(2) Where there are no private aspects to a special instrument procedure, the following statement must be added in the "Notes" section of the Form 8260-7A restricting the use of that procedure: "Chart Note: Use of this procedure requires specific authorization by FAA Flight Standards."

(3) Regional development and/or documentation of foreign terminal instrument procedures (FTIP) are not recommended unless the procedures can be subsequently maintained by the initiating region under Order 8260.31. In such cases, the FTIP may be documented on Form 8260-7A and processed in accordance with Order 8260.31.

h. Effective Date. The effective date of the Special procedure will be entered by the RNGB. The RNGB must coordinate this date with the affected ATC facility to ensure they have adequate time to train controllers and incorporate the procedure into electronic data systems prior to implementation. Effective dates must be based on 28-day Aeronautical Information Regulation and Control (AIRAC) cycle dates (or 56-day AIRAC cycle dates if en route chart changes are required) as published in Order 8260.26.

8-8-4. Form 8260-10, Continuation Sheet.

a. Use Form 8260-10 is used as a continuation sheet for Forms 8260-3/4/5/7A. In all cases, clearly identify by name or format what section or information is being presented on the continuation sheet. The Form 8260-10 must be completed as follows:

(1) Enter the type procedure and 14 CFR part numbers as required.

Note: For Special procedures, enter "Special" in place of the 14 CFR part numbers.

(2) Enter the necessary procedural data in the space provided.

(3) Enter the "Lower Blocks" identical to the information presented on page 1 of the SIAP [see paragraph 8-6-9].

(4) Enter the page number and number of pages required for the procedure in the lower right-hand corner e.g., Page 2 of 2 pages. The basic Forms 8260-3/4/5/7A must be page number one, with additional Forms 8260-10 numbered sequentially.

b. Certification. Procedure certification is accomplished on the reverse side of the basic procedure form; e.g., Forms 8260-3, 8260-5, etc. [see paragraph 8-3-2]. "All Affected Procedures Reviewed," "Coordinates of Facilities," "Required Effective Date," "Coordinated with Flight Checked By," "Developed By," and "Approved By" blocks of Form 8260-10 are left blank. "Changes" and "Reasons" blocks can be used for appropriate entries that do not fit on the basic procedure form.

Section 8-9. Terminal Arrival Area (TAA) Design Criteria – Documentation and Processing

8-9-1. Instructions for 8260-Series Forms.

a. Documenting the TAA. Enter all normal terminal route and TAAinformation on the appropriate 8260-series forms. If the entire TAA cannot be documented on the 8260-3/5/7A, enter all TAA data on Form 8260-10, Continuation Sheet (see figures 8-9-1 and 8-9-2). For TAA entries, the "From" and "To" entries do not describe routes of flight, but rather describe a volume of airspace within which an aircraft will proceed inbound from the 30-mile arc boundary toward an associated "T" IAF or IF/IAF. Enter the data in the specified standardized format detailed below to assist cartographers in developing the desired published display. Each entry shall coincide with the corresponding entry on Form 8260-9, Standard Instrument Approach Procedure Data Record, to provide correlation between terrain/obstacle data and the minimum altitude associated with the appropriate TAA area. Provide a graphic depiction of the TAA with areas defined and indicate the minimum altitude associated with each area/sector. Do not establish minimum altitudes that will require aircraft to climb while inbound toward the respective "T" IAF. Comply with existing instructions in this order relative to terminal routes, except as noted below:

(1) From. For TAA entries, begin at the outermost boundary and work inward toward the respective "T" IAF. Enter an area/sector description beginning with the inbound magnetic course that is used as the sector boundary between the right base and straight-in sectors and proceed in a clockwise direction. Enter the magnetic value of the straight-line boundary (or its extension) described "To" the associated "T" IAF, followed by the arc boundary distance (NM) for that point, and separate the entries by a "/"; e.g., 090/30. Then enter "CW" followed by a point along the same arc boundary intersected by the next straight-line boundary; e.g., 270/30. Thus, in a basic "T" configuration without stepdown sectors, the straight-in "From" entry would appear as "090/30 CW 270/30." Enter data in a similar manner to describe other areas and sectors.

(a) Sequentially number (1, 2, etc.) the first line entry describing the area/sector for which different minimum altitudes are established. It is possible for an area/sector to be irregularly shaped, but have only one minimum altitude. Enter the associated data for such an area together as a group of sequential line entries.

(b) Enter "NoPT" following each line entry that contains the specific 30-mile arc boundary for which that label is appropriate. If a course reversal is required, make no entry regarding PT requirements on the line entry describing the 30-mile arc boundary.

(2) To. Enter area/sector straight-line/arc boundary descriptions as above, which in combination with the associated entry in the "From" block, encloses the area being documented. For example, the "To" stepdown arc entry associated with the "From" entry above for a basic "T" configuration without stepdown sectors would be the "T" IAF; therefore, enter the appropriate fix name and fix type; e.g., POPPS IAF, MAACH IAF, etc. If the area has been sectored, the "To" entry could be "090/22 CW 180/22."

(3) Course and distance. No entry is required for TAA area/sector documentation. Course and distance for feeder routes, when required, will be to the appropriate "T" IAF or IF/IAF using the provisions of in this order.

(4) Altitude. Enter the minimum altitude of the area/sector on each line.

b. Form 8260-9, Standard Instrument Approach Procedure Data Record. Comply with instructions in paragraph 8-7-1b for documenting controlling/terrain, coordinates, minimum altitudes, etc.

Figure 8-9-1. Example #1, FAA Form 8260-10

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION RNAV — **INSTRUMENT APPROACH PROCEDURE** FLIGHT STANDARDS SERVICES - TITLE 14 CFR PART 97.33	Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

FROM:	TO:	ALTITUDE
1. 090/30 CW 180/30 (NoPT)	090/22 CW 180/22	6000
2. 090/17 CW 270/30 (NoPT)	210/20 CW 270/20	4000
3. 090/22 CW 180/22 (NoPT)	POPPS (IF/IAF)	2000
180/30 CW 210/30 (NoPT)	POPPS (IF/IAF)	2000
210/20 CW 270/20 (NoPT)	POPPS (IF/IAF)	2000
4. 270/30 CW 360/30	270/17 CW 360/17	6000
5. 270/17 CW 360/17	MAACH (IAF)	3000
6. 360/30 CW 090/30	360/17 CW 090/17	6000
7. 360/17 CW 090/17	SISSY (IAF)	4100

(This example relative to figure 8-9-3)

CITY AND STATE	ELEVATION: 123 TDZE: 123 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
ANYWHERE, VA	**ANYWHERE AIRPORT**	**RNAV**	**RNAV (GPS) RWY 18, ORIGINAL**	AMDT: **NONE** DATED:

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Figure 8-9-2. Example #2, FAA Form 8260-10

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

RNAV — **INSTRUMENT APPROACH PROCEDURE**

FLIGHT STANDARDS SERVICES - TITLE 14 CFR PART 97.33

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

FROM:	TO:	ALTITUDE
1. 090/30 CW 210/30 (NoPT)	090/17 CW 210/17	6000
2. 090/17 CW 210/17 (NoPT)	ALPHA (IF/IAF)	2000
3. 210/30 CW 270/30 (NoPT)	ALPHA (IF/IAF)	8000
4. 270/30 CW 360/30	BRAVO (IAF)	4000
5. 360/30 CW 090/30	CHRLY (IAF)	3000

(This example relative to figure 8-9-4)

CITY AND STATE	ELEVATION: 123 TDZE: 123 / AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP: / AMDT: NONE / DATED:
ANYWHERE, VA	**ANYWHERE AIRPORT**	**RNAV**	**RNAV (GPS) RWY 18, ORIGINAL**	

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Figure 8-9-3. Example #1

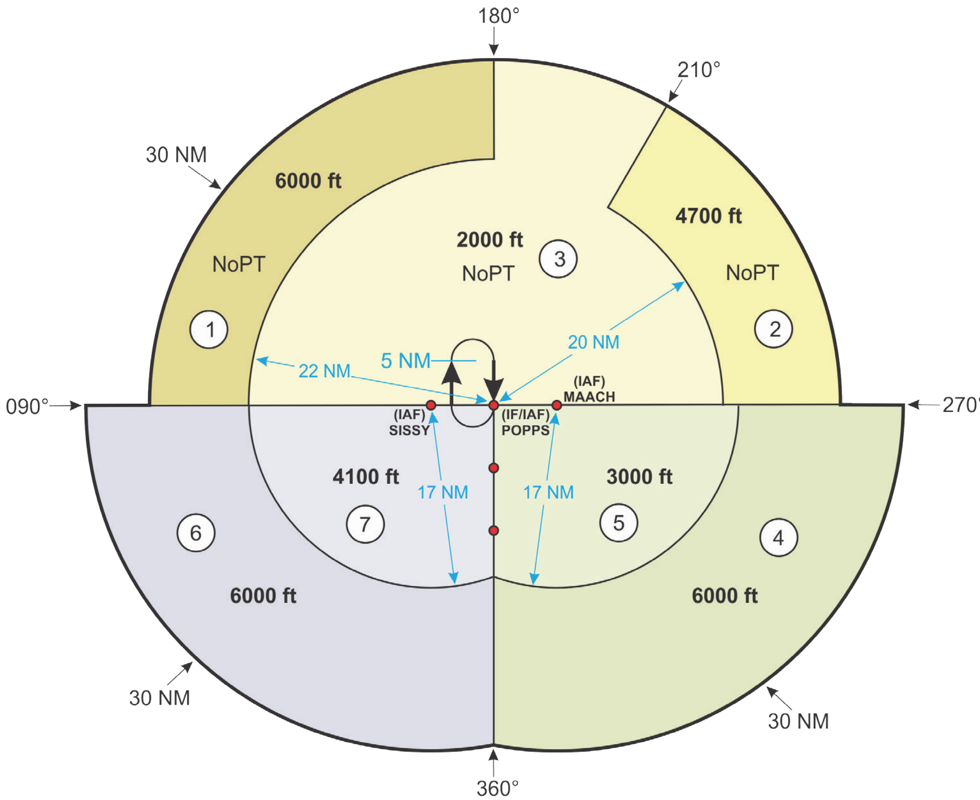
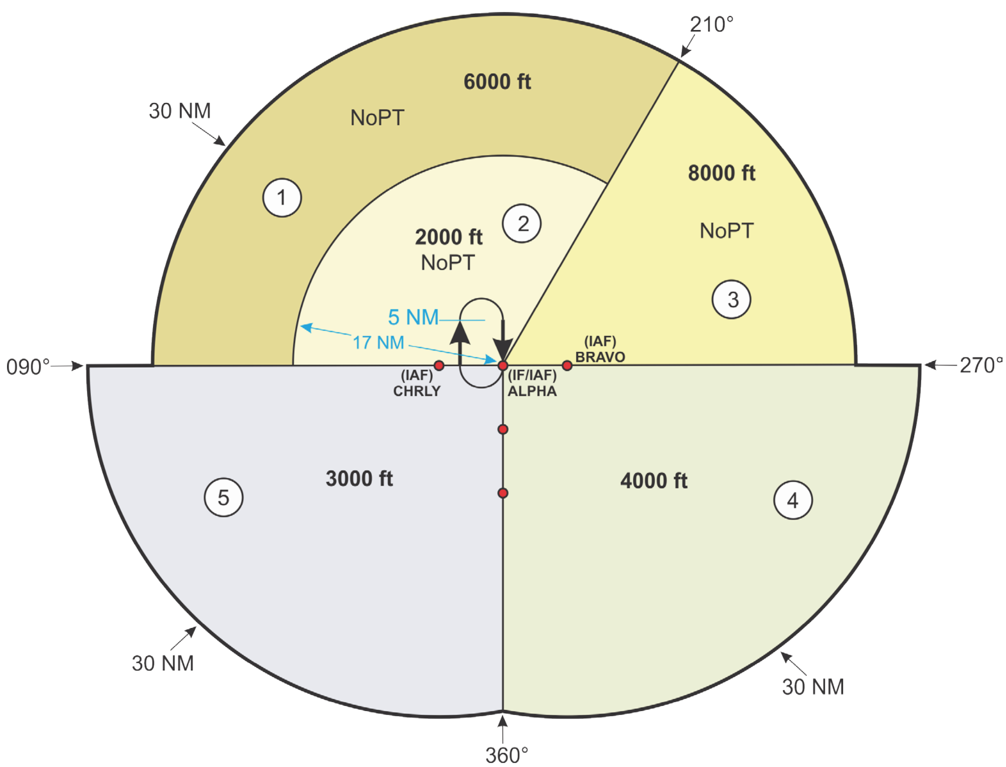


Figure 8-9-4. Example #2



Section 8-10. Transmittal of Airways-Route Data, FAA Form 8260-16

8-10-1. Preparation of Form 8260-16. This form serves as a transmittal sheet of en route procedural data for Air Traffic Service (ATS) routes, both non-regulated and those published under Title 14 CFR Part 71 and Minimum IFR Altitudes published under Title 14 CFR Part 95. Part 71 ATS routes include Victor Airways, Jet Routes, RNAV "Q" (for FL 180 up to FL 450) and "T" Routes (below FL 180). The form documents current en route information. All airway/route changes/cancellations must be documented on Form 8260-16 to ensure publication. Document only one airway or route per Form 8260-16. If airways overlap, document each on a separate form.

a. Airway No. or Route. Enter the airway number, "Part 95 Direct," or "Off-Airway Non-95" as appropriate. Use a separate form for each type of route.

Examples:

For High Altitude RNAV routes - Q502
For Low Altitude RNAV routes – T204
For Jet routes – J345
For Victor Airways – V123

b. Routine or Docket No. Enter the docket number when the request is associated with an airspace action. If processing is to be routine, leave blank.

c. From/Fly-By/Fly-Over/To/RNP/Leg Type. Each segment (fix to fix) must be listed, unless succeeding segments have been amended. Segments must be separated at facilities, changes of MEA, MOCA, MAA, and all MCA flagged fixes, and MRA flagged fixes where the MRA is higher than the MEA for route of flight. All airways and routes terminate at the U.S. control area boundary (route alignment may be explained in "Segment Remarks").

(1) Route segments must be listed from West to East for even numbered ATS routes or South to North for odd numbered routes. When amending published routes, follow the order of listing in the annual consolidation of Part 95 IFR altitudes.

(2) Facilities are identified by name, by the three letter ICAO identifier in parentheses, the facility type, and the two letter state abbreviation and if a waypoint (include type for RNAV routes).

Examples:

Airway/Jet Route: Charlotte (CLT), VOR/DME, NC
RNAV Route: Charlotte (CLT), VOR/DME, NC (FB)

(3) Fixes are identified by name, the two letter state abbreviation and if a waypoint (include type for RNAV routes).

Examples:

Airway/Jet Route: JOTTA, NC
RNAV Route: JOTTA, NC (FB)

(4) In the "TO" block, document the leg type (path terminator) used for each segment of RNAV routes. Only track-to-fix (TF) leg types are used in RNAV routes.

Examples:

Charlotte, (CLT), NC, VOR/DME, (FB) (TF)
JOTTA, NC (FB) (TF)

(5) "Q" routes can be flown using GNSS or DME/DME/IRU. Required DME facilities will be documented in the SEGMENT REMARKS section. In some cases, sufficient ground-based navigation sources are inadequate/unavailable to support DME/DME/IRU operations. When this occurs, the route must be annotated "GNSS REQUIRED." Document this requirement in the Segment Remarks section of Form 8260-16.

Note: All "Q" routes will be assessed using the RNAV-Pro DME screening software. This screening will determine if the "GNSS REQUIRED" note is required. However, the route may have passed the RNAV-Pro screening but Flight Inspection may have determined that the route is unsuitable for DME/DME/IRU operations and require the note to be placed on the route.

d. Controlling Terrain/Obstruction and Coordinates. When controlled airspace is a factor in MEA determination, make two entries: the highest terrain and the highest tree or man-made obstacle (if above the highest terrain) with the obstacle ID number. Enter coordinates in degrees, minutes and seconds to the hundredth. Identify which obstacle controls the MEA, even though MRA may require a higher altitude by annotating under the "CONT OBST" block with a "Y" (YES) in either the obstacle or terrain line. Next enter the obstacle height, followed by the "AC" (accuracy code), then enter the required obstacle clearance "ROC" for each segment. If the controlling obstacle is located in the secondary area, state only the reason for and amount of adjustment in the "Adjustments" block. No entry is required for high altitude (Jet or RNAV) routes if terrain is not a factor. Enter reduction of mountainous obstacle clearance in the "Adjustments" block.

e. MRA/MOCA. Enter both figures. To reduce chart clutter, MOCAs less than 500 feet below MEAs should not be published unless they allow use of a cardinal altitude within 25 NM of a facility. If a MOCA is not to be published, enter a "Y" or "N" in the "PUB" block.

(1) Low altitude RNAV routes assume GPS/GNSS signal coverage MRA is adequate at the MOCA; therefore, enter the MOCA value in the MRA block. Increase the MRA value if required by flight inspection.

(2) For Low altitude RNAV routes do not publish a MOCA that is less than 500 feet below the MEA unless the resulting MOCA will provide a cardinal altitude.

f. MAA/MEA. Enter both figures. When dual MEAs are used, indicate the altitudes in MEA (1) and MEA (2) then indicate the direction of flight in the "Direction" block for each MEA. When an MEA change occurs at a DME-only fix, dual MEAs are required since non-DME aircraft cannot receive the fix. When minor MEA differences exist in adjacent segments, coordinate with ATC to establish a common altitude.

(1) For Low altitude RNAV "T" routes enter the MRA value or minimum altitude based on airspace evaluation, whichever is higher. Increase the MRA value if required by flight inspection. The MEA block will be left blank.

(2) For high altitude RNAV "Q" routes, the MEA, like Jet routes, is considered to be FL 180 unless noted otherwise (see paragraph 8-9-1g). The MEA block will be left blank except when there is insufficient DME coverage to support the use of DME/DME/IRU "Q" route operations at FL180. An MEA may then be established to define the lowest altitude that will support DME/DME/IRU use. This will be identified in the "D/D/I" block with a "Y" or "N."

g. GNSS MEA. A GNSS MEA is required on all RNAV routes and may be established (when required) for low altitude Victor or colored airways. Do not establish a GNSS MEA on a Victor or colored airway unless it is at least 500 feet lower than the conventional MEA or achieves a cardinal altitude. The GNSS MEA must be an altitude at or above the MOCA and provide communication capability as required in TERPS.

Note: These MEAs will be depicted on en route charts with a "G" suffix. Example: 3500G.

h. Changeover Point (Not applicable for RNAV routes). Enter the changeover point in the segment where it lies. If midpoint, leave blank. If *not* midpoint, enter the mileage from and the identifier of the nearest facility. If a gap exists, the changeover point may be at the middle of the gap; however, leave blank. If a dogleg course change has been established, enter "DL." When the dogleg point meets en route VHF intersection and/or DME fix criteria, establish a pronounceable named fix. When this is not possible, establish a CNF to identify the dogleg point.

i. MRA/MCA/MTA (MRA not applicable for low altitude RNAV routes). Entries will be made in each associated block "FIX MRA" and "FIX MCA" with fix name and altitude. MCAs will include the direction of flight. The same information is required on the Form 8260-2 for the fix. When an MTA is required by Order 8260.3, enter a "Y" or "N" in the MTA block when an MTA is applicable for the route outbound from the fix/facility. Document MTA information to be charted on the Form 8260-16 associated with the route inbound from the fix/facility. See examples below.

j. Segment Remarks.

(1) Use this section for all pertinent supporting data. Typical entries include:

Airspace floor
Terrain clearance applied
Dogleg radials for Part 95 Direct and
Off-Airway Non-95 Routes
Reason for MEA adjustment

Reason for MAA reduction
MEA gap
Cancel segment (reason)
GNSS Required
DME facilities required for Q routes
Airway restrictions
Minimum Turning Altitude
MCA = Flight Check MRA

(2) When airway restrictions need to be identified on the chart, prior to the restriction indicate "chart."

Example:

"Chart: ALB R-067 UNUSABLE, USE CAM R-248."

"Chart: MTA V330 E TO V520 W 16000"
(Document MTA on V330 Form 8260-16)

"Chart: MTA V465 NE TO V330 W OR V520 W 16000"
(Document MTA on V465 Form 8260-16)

k. Changes-Reason. To assist charting agencies, when segments are amended or canceled, describe the changes in the Changes-Reason" section.

Example:

RAISED MEA TO MATCH OVERLYING V188 MEA.

DELETED DIRECTIONAL MEA

l. Flight Inspection Dates. Enter the date of the original flight inspection, if available, or indicate "On File." Use "Pending" for new/relocated facility dockets. If flight inspection records are not available, leave blank. Use additional lines to log subsequent flight inspections, periodic reviews, and amendments. When the form's available spaces are filled, white-out the entries on manually completed forms, and start over. Regenerate electronic forms as necessary when available spaces are filled, deleting previously entered dates. Carry forward any manually entered dates.

m. Distribution. The approved Form 8260-16 must be prepared by AeroNav Products and distributed as defined in table 8-3-1.

n. Examples. Figure 8-9-1 through figure 8-9-4 contains a consolidated group of examples that can be used when completing Form 8260-16.

o. Cancellation. Airways cancellation is accomplished through the rulemaking process. Regions publish a Notice of Proposed Rule-making (NPRM), and upon publication of the final rule, NFDC removes the affected airways from 14 CFR Part 95. Individuals completing this form remove or line through, as appropriate, the Form 8260-16 entries referenced in the final rule.

Figure 8-10-1. Transmittal of Airways/Route Data

TRANSMITTAL OF AIRWAYS/ROUTES DATA

PAGE 1 OF 4 PAGES

AIRWAY NO or ROUTE
V10

ROUTINE or DOCKET NO

FROM	STATE	FB/FO	TO	STATE	FB/FO	RNP	LEG TYPE
U.S. CANADIAN BORDER			FAILS	OH			

OBSTRUCTION	COORDINATES	ELEV MSL	CONT OBS	AC	ROC	ADJUSTMENTS
SHIP	415212.03N/0813814.98W	771			1000	
OVERWATER	415212.03N/0813814.98W	571	Y			

MRA	MOCA	PUB	MAA	D/D/I	MEA (1)	DIRECTION (1)	MEA (2)	DIRECTION (2)	GNSS MEA
4000	1800	Y	17500		4000				2300

COP	FIX MRA	FIX MCA	MTA
			N

SEGMENT REMARKS

CHANGES-REASON
ADDED GNSS-ATC REQUEST
RAISED MEA-TO MATCH OVERLYING V188 MEA

FAA FORM 8260-16 (01/14)

TRANSMITTAL OF AIRWAYS/ROUTES DATA

PAGE 2 OF 4 PAGES

AIRWAY NO or ROUTE
V10

ROUTINE or DOCKET NO

FROM	STATE	FB/FO	TO	STATE	FB/FO	RNP	LEG TYPE
FAILS	OH		WONOP	OH			

OBSTRUCTION	COORDINATES	ELEV MSL	CONT OBS	AC	ROC	ADJUSTMENTS
TOWER	414538.95N/0811326.73W	978			1000	
TERRAIN	414548.00N/0811400.00W	657	Y			

MRA	MOCA	PUB	MAA	D/D/I	MEA (1)	DIRECTION (1)	MEA (2)	DIRECTION (2)	GNSS MEA
3000	2000	Y	17500		3000				

COP	FIX MRA	FIX MCA	MTA
DL WONOP	WONOP 5000		N

SEGMENT REMARKS
RETAINED CURRENT MEA

CHANGES-REASON
ADDED SEGMENT-FLIGHT CHECK REQUEST
ADDED MRA FLAG-YNG RESTRICTION PER FLIGHT CHECK 4/16/2009

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TRANSMITTAL OF AIRWAYS/ROUTES DATA

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AIRWAY NO or ROUTE
V10

ROUTINE or DOCKET

FROM	STATE	FB/FO	TO	STATE	FB/FO	RNP	LEG TYPE
WONOP	OH		YOUNGSTOWN (YNG) VORTAC	OH			

OBSTRUCTION	COORDINATES	ELEV MSL	CONT OBS	AC	ROC	ADJUSTMENTS
TOWER	413802.00N/0810340.00W	1620			1000	
TERRAIN	413839.00N/0810333.00W	1326	Y			

MRA	MOCA	PUB	MAA	D/D/I	MEA (1)	DIRECTION (1)	MEA (2)	DIRECTION (2)	GNSS MEA
5000	2700	Y	17500		5000				3000

COP	FIX MRA	FIX MCA	MTA
			N

SEGMENT REMARKS
RETAINED CURRENT MEA

CHANGES-REASON
ADDED GNSS-ATC REQUEST
ADDED MEA-PER FLIGHT CHECK 4/16/2009
CHANGED ICKOJ TO WONOP- ATC REQUEST
THIS IS A CORRECTED COPY OF THE FORM DEVELOPED ON 4/29/2010

FAA FORM 8260-16 (01/14)

TRANSMITTAL OF AIRWAYS/ROUTES DATA

PAGE 4 OF 4 PAGES

AIRWAY NO or ROUTE
V10

ROUTINE or DOCKET

FLIGHT CHECK	**DATE** PENDING	**OFFICE**		**NAME**
APPROVED	**DATE**	**OFFICE** AJV-311	**TITLE** MANAGER	**NAME** TILDAL N. WAVE

FAA FORM 8260-16 (01/14)

Figure 8-10-2. Transmittal of Airways/Route Data

TRANSMITTAL OF AIRWAYS/ROUTES DATA

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AIRWAY NO or ROUTE
V330

ROUTINE or DOCKET NO

FROM	STATE	FB/FO	TO	STATE	FB/FO	RNP	LEG TYPE
IDAHO FALL (IDF) VOR/DME	ID		OSITY	ID			

OBSTRUCTION	COORDINATES	ELEV MSL	CONT OBS	AC	ROC	ADJUSTMENTS
TREE	432912.00N/1114118.00W	6177	Y		2000	MT -300
TERRAIN	432912.00N/1114118.00W	6077				

MRA	MOCA	PUB	MAA	D/D/I	MEA (1)	DIRECTION (1)	MEA (2)	DIRECTION (2)	GNSS MEA
8000	7900	N	17500		8000				

COP	FIX MRA	FIX MCA	MTA
		OSITY 9500E	N

SEGMENT REMARKS

CHANGES-REASON
DELETED MCA AT IDA VOR/DME - ADDED MCA AT OSITY
DELETED DIRECTIONAL MEA - MEA CARDINAL ALTITUDE

FAA FORM 8260-16 (01/14)

TRANSMITTAL OF AIRWAYS/ROUTES DATA

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AIRWAY NO or ROUTE
V330

ROUTINE or DOCKET NO

FROM	STATE	FB/FO	TO	STATE	FB/FO	RNP	LEG TYPE
OSITY	ID		JACKSON HOLE (JAC) VOR/DME	ID			

OBSTRUCTION	COORDINATES	ELEV MSL	CONT OBS	AC	ROC	ADJUSTMENTS
AAO	434118.30N/1104858.30W	12138	Y		2000	SA -
TERRAIN	433900.00N/1105057.00W	11132				

MRA	MOCA	PUB	MAA	D/D/I	MEA (1)	DIRECTION (1)	MEA (2)	DIRECTION (2)	GNSS MEA
14000	13600	N	17500		14000				

COP	FIX MRA	FIX MCA	MTA
10 JACKSON HOLE (JAC) VOR/DME		JACKSON HOLE (JAC) VOR/DME 13400W	Y

SEGMENT REMARKS
CHART: MTA V330E TO V520 W 16000
JAC R-251 UNUSABLE BEYOND 10 NM; PRECIPTIOUS TERRAIN

CHANGES-REASON
DECREASED MOCA-
MEA CARDINAL ALTITUDE-
INCREASED MCA-

FAA FORM 8260-16 (01/14)

TRANSMITTAL OF AIRWAYS/ROUTES DATA

AIRWAY NO or ROUTE
V330

ROUTINE or DOCKET NO

	DATE	OFFICE	TITLE	NAME
FLIGHT CHECK	6/30/2010	AJV-33		FLYBY ANGLE NIGHTENGALE
APPROVED BY	4/21/2010	AJW-3773	MANAGER	WISE G. GUY

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Figure 8-10-3. Transmittal of Airways/Route Data

TRANSMITTAL OF AIRWAYS/ROUTES DATA

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AIRWAY NO or ROUTE
J40

ROUTINE or DOCKET NO

FROM	STATE	FB/FO	TO	STATE	FB/FO	RNP	LEG TYPE
MONTGOMERY (MGM) VORTAC	AL		MACON (MCN) VORTAC	GA			

OBSTRUCTION	COORDINATES	ELEV MSL	CONT OBS	AC	ROC	ADJUSTMENTS

MRA	MOCA	PUB	MAA	D/D/I	MEA (1)	DIRECTION (1)	MEA (2)	DIRECTION (2)	GNSS MEA
18000			45000		18000				

COP	FIX MRA	FIX MCA	MTA
139 MONTGOMERY (MGM) VORTAC			N

SEGMENT REMARKS
CHART: MCN R-258 UNUSABLE USE MGM R-075 FOR NAVIGATION

CHANGES-REASON
CLEAR NOTAM-

FAA FORM 8260-16 (01/14)

TRANSMITTAL OF AIRWAYS/ROUTES DATA

AIRWAY NO or ROUTE
J40

ROUTINE or DOCKET NO

FLIGHT CHECK	**DATE** ON FILE	**OFFICE**		**NAME**
APPROVED	**DATE** 10/28/2010	**OFFICE** AJW-3773	**TITLE** MANAGER	**NAME** TUTTLE B WARE

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Figure 8-10-4. Transmittal of Airways/Route Data

TRANSMITTAL OF AIRWAYS/ROUTES DATA

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AIRWAY NO or ROUTE
Q26

ROUTINE or DOCKET NO

FROM	STATE	FB/FO	TO	STATE	FB/FO	RNP	LEG TYPE
WALNUT RIDGE, (ARG) VORTAC	AR		DEVAC	AL			

OBSTRUCTION	COORDINATES	ELEV MSL	CONT OBS	AC	ROC	ADJUSTMENTS

MRA	MOCA	PUB	MAA	MEA (1)	D/D/I	DIRECTION (1)	MEA (2)	DIRECTION (2)	GNSS MEA
20000			33000	20000	Y				18000

COP	FIX MRA	FIX MCA	MTA
			N

SEGEMENT REMARKS
DME FACILITIES REQUIRED LIT, JKS, GQO, MEM, BNA, FAM, ARG, DYR, VUZ, RMG; PUBLISH REMARKS IN A/FD ONLY

CHANGES-REASON
DECREASE MAA FOR JKS INTERFERENCE- FLIGHT CHECK

FAA FORM 8260-16 (01/14)

TRANSMITTAL OF AIRWAYS/ROUTES DATA

AIRWAY NO or ROUTE
Q26

ROUTINE or DOCKET NO

FLIGHT CHECK	**DATE** 3/21/2010	**OFFICE** AJW-3773		**NAME** JOHN W. AIRPLANE
APPROVED BY	**DATE** 3/29/2010	**OFFICE** AJW-375	**TITLE** MANAGER	**NAME** TILE M. OVER

FAA FORM 8260-16 (01/14)

Figure 8-10-5. Transmittal of Airways/Route Data

TRANSMITTAL OF AIRWAYS/ROUTES DATA

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AIRWAY NO or ROUTE
T273

ROUTINE or DOCKET NO
10-AAL-7

FROM	STATE	FB/FO	TO	STATE	FB/FO	RNP	LEG TYPE
FAIRBANKS (FAI) VORTAC	AK	FB	AYKIN	AK	FB		TF

OBSTRUCTION	COORDINATES	ELEV MSL	CONT OBS	AC	ROC	ADJUSTMENTS
AAO	653215.00N/1472030.00W	4659	Y		2000	
TERRAIN	653215.00N/1472030.00W	4459				

MRA	MOCA	PUB	MAA	D/D/I	MEA (1)	DIRECTION (1)	MEA (2)	DIRECTION (2)	GNSS MEA
6700	6700	N	17500						6700

COP	FIX MRA	FIX MCA	MTA
			N

SEGMENT REMARKS
PRECIPITOUS TERRAIN EVALUATED; ADDED SEGMENT-

CHANGES-REASON

FAA FORM 8260-16 (01/14)

TRANSMITTAL OF AIRWAYS/ROUTES DATA

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AIRWAY NO or ROUTE
T273

ROUTINE or DOCKET NO
10-AAL-7

FROM	STATE	FB/FO	TO	STATE	FB/FO	RNP	LEG TYPE
AYKIN	AK	FB	TUVVO	AK	FB		TF

OBSTRUCTION	COORDINATES	ELEV MSL	CONT OBS	AC	ROC	ADJUSTMENTS
TREE	655312.10N/1471424.70W	4277	Y		2000	MT-300
TERRAIN	655312.10N/1471424.70W	4177				

MRA	MOCA	PUB	MAA	D/D/I	MEA (1)	DIRECTION (1)	MEA (2)	DIRECTION (2)	GNSS MEA
6000	6000	N	17500						6000

COP	FIX MRA	FIX MCA	MTA
			N

SEGMENT REMARKS
ADDED SEGMENT-

CHANGES-REASON

FAA FORM 8260-16 (01/14)

TRANSMITTAL OF AIRWAYS/ROUTES DATA

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AIRWAY NO or ROUTE
T273

ROUTINE or DOCKET NO
10-AAL-7

FROM	STATE	FB/FO	TO	STATE	FB/FO	RNP	LEG TYPE
TUVVO	AK	FB	SOTGE	AK	FB		TF

OBSTRUCTION	COORDINATES	ELEV MSL	CONT OBS	AC	ROC	ADJUSTMENTS
AAO	691639.80N/1445440.60W	9220	Y		2000	
TERRAIN	691639.80N/1445440.60W	9020				

MRA	MOCA	PUB	MAA	D/D/I	MEA (1)	DIRECTION (1)	MEA (2)	DIRECTION (2)	GNSS MEA
11300	11300	N	17500						11300

COP	FIX MRA	FIX MCA	MTA
		SOTGE 8000S	N

SEGMENT REMARKS
PRECIPITOUS TERRAIN EVALUATED; ADDED SEGMENT-

CHANGES-REASON

FAA FORM 8260-16 (01/14)

TRANSMITTAL OF AIRWAYS/ROUTES DATA

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AIRWAY NO or ROUTE
T273

ROUTINE or DOCKET NO
10-AAL-7

FROM	STATE	FB/FO	TO	STATE	FB/FO	RNP	LEG TYPE
SOTGE	AK	FB	ROCES	AK	FB		TF

OBSTRUCTION	COORDINATES	ELEV MSL	CONT OBS	AC	ROC	ADJUSTMENTS
TREE	694433.00N/1443842.00W	1016			2000	AS3000, MT-300
TERRAIN	655312.10N/1471424.70W	916	Y			

MRA	MOCA	PUB	MAA	D/D/I	MEA (1)	DIRECTION (1)	MEA (2)	DIRECTION (2)	GNSS MEA
4000	2800	N	17500						4000

COP	FIX MRA	FIX MCA	MTA
			N

SEGMENT REMARKS
AS USED FOR WILDLIFE REFUGE; SEGMENT ADDED; 4000 CARDINAL ALTITUDE PUBLISHED

CHANGES-REASON

	DATE	OFFICE	TITLE	NAME
FLIGHT CHECK	9/25/2011	AJW-3773		JOHN P. JONES
APPROVED	10/25/2011	AJV-31	MANAGER	RAYMOND J. JOHNSON JR.

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Figure 8-10-6. Transmittal of Airways/Route Data

TRANSMITTAL OF AIRWAYS/ROUTES DATA

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AIRWAY NO or ROUTE
TK502

ROUTINE or DOCKET NO
10-AEA-20

FROM	STATE	FB/FO	TO	STATE	FB/FO	RNP	LEG TYPE
WESTMINSTER (EMI) VORTAC	MD	FB	TAYLO	MD	FB		TF

OBSTRUCTION	COORDINATES	ELEV MSL	CONT OBS	AC	ROC	ADJUSTMENTS
TREE	393342.00N/0765748.00W	1052				MT -500
TERRAIN	393342.00N/0765748.00W	952	Y			

MRA	MOCA	PUB	MAA	D/D/I	MEA (1)	DIRECTION (1)	MEA (2)	DIRECTION (2)	GNSS MEA
	2600	N	17500						2700

COP	FIX MRA	FIX MCA	MTA
			N

SEGMENT REMARKS
NEW ROUTE

CHANGES-REASON

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TRANSMITTAL OF AIRWAYS/ROUTES DATA

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AIRWAY NO or ROUTE
TK502

ROUTINE or DOCKET NO
10-AEA-20

FROM	STATE	FB/FO	TO	STATE	FB/FO	RNP	LEG TYPE
TAYLO	MD	FB	WINGO	PA	FB		TF

OBSTRUCTION	COORDINATES	ELEV MSL	CONT OBS	AC	ROC	ADJUSTMENTS
AAO	394345.00N/0762830.00W	981				
TERRAIN	394345.00N/0762830.00W	781	Y			

MRA	MOCA	PUB	MAA	D/D/I	MEA (1)	DIRECTION (1)	MEA (2)	DIRECTION (2)	GNSS MEA
	2000	Y	17500						2500

COP	FIX MRA	FIX MCA	MTA
			N

SEGMENT REMARKS
NEW ROUTE

CHANGES-REASON

FAA FORM 8260-16 (01/14)

TRANSMITTAL OF AIRWAYS/ROUTES DATA

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AIRWAY NO or ROUTE
TK502

ROUTINE or DOCKET NO
10-AEA-20

FROM	STATE	FB/FO	TO	STATE	FB/FO	RNP	LEG TYPE
WINGO	PA	FB	SINON	PA	FB		TF

OBSTRUCTION	COORDINATES	ELEV MSL	CONT OBS	AC	ROC	ADJUSTMENTS
TOWER	400331.68N/0753552.83W	1177				
TERRAIN	400318.00N/0753615.00W	722	Y			

MRA	MOCA	PUB	MAA	D/D/I	MEA (1)	DIRECTION (1)	MEA (2)	DIRECTION (2)	GNSS MEA
	2200	N	17500						2400

COP	FIX MRA	FIX MCA	MTA
			N

SEGMENT REMARKS
NEW ROUTE

CHANGES-REASON

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TRANSMITTAL OF AIRWAYS/ROUTES DATA

AIRWAY NO or ROUTE
TK502

ROUTINE or DOCKET NO
10-AEA-20

FROM	STATE	FB/FO	TO	STATE	FB/FO	RNP	LEG TYPE
SINON	PA	FB	GRIBL	PA	FB		TF

OBSTRUCTION	COORDINATES	ELEV MSL	CONT OBS	AC	ROC	ADJUSTMENTS
TOWER	400516.00N/0764110.00W	1180				
TERRAIN	400339.00N/0753524.00W	729	Y			

MRA	MOCA	PUB	MAA	D/D/I	MEA (1)	DIRECTION (1)	MEA (2)	DIRECTION (2)	GNSS MEA
	2200	N	17500						2400

COP	FIX MRA	FIX MCA	MTA
			N

SEGMENT REMARKS
NEW ROUTE

CHANGES-REASON

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TRANSMITTAL OF AIRWAYS/ROUTES DATA

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AIRWAY NO or ROUTE
TK502

ROUTINE or DOCKET NO
10-AEA-20

FROM	STATE	FB/FO	TO	STATE	FB/FO	RNP	LEG TYPE
GRIBL	PA	FB	TOLAN	NJ	FB		TF

OBSTRUCTION	COORDINATES	ELEV MSL	CONT OBS	AC	ROC	ADJUSTMENTS
TOWER	401658.00N/0744110.00W	1049	Y			
TERRAIN	402215.00N/0744021.00W	365				

MRA	MOCA	PUB	MAA	D/D/I	MEA (1)	DIRECTION (1)	MEA (2)	DIRECTION (2)	GNSS MEA
	2100	N	17500						2100

COP	FIX MRA	FIX MCA	MTA
			N

SEGMENT REMARKS
NEW ROUTE

CHANGES-REASON

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TRANSMITTAL OF AIRWAYS/ROUTES DATA

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AIRWAY NO or ROUTE
TK502

ROUTINE or DOCKET NO
10-AEA-20

FROM	STATE	FB/FO	TO	STATE	FB/FO	RNP	LEG TYPE
TOLAN	NJ	FB	BALDE	NY	FB		TF

OBSTRUCTION	COORDINATES	ELEV MSL	CONT OBS	AC	ROC	ADJUSTMENTS
AAO	402357.00N/0741786.00W	420				AT 180
TERRAIN	402357.00W/0741786.00N	220	Y			

MRA	MOCA	PUB	MAA	D/D/I	MEA (1)	DIRECTION (1)	MEA (2)	DIRECTION (2)	GNSS MEA
	1500	Y	17500						2100

COP	FIX MRA	FIX MCA	MTA
			N

SEGMENT REMARKS
NEW ROUTE

CHANGES-REASON

FAA FORM 8260-16 (01/14)

TRANSMITTAL OF AIRWAYS/ROUTES DATA

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AIRWAY NO or ROUTE
TK502

ROUTINE or DOCKET NO
10-AEA-20

FROM	STATE	FB/FO	TO	STATE	FB/FO	RNP	LEG TYPE
BALDE	NY	FB	SPATE	NY	FB		TF

OBSTRUCTION	COORDINATES	ELEV MSL	CONT OBS	AC	ROC	ADJUSTMENTS
AAO	403242.00N/0741206.00W	378				AT 222
TERRAIN	403242.00N/0741206.00W	178	Y			

MRA	MOCA	PUB	MAA	D/D/I	MEA (1)	DIRECTION (1)	MEA (2)	DIRECTION (2)	GNSS MEA
	1400	Y	17500						2100

COP	FIX MRA	FIX MCA	MTA
			N

SEGMENT REMARKS
NEW ROUTE

CHANGES-REASON

FAA FORM 8260-16 (01/14)

TRANSMITTAL OF AIRWAYS/ROUTES DATA

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AIRWAY NO or ROUTE
TK502

ROUTINE or DOCKET NO
10-AEA-20

FROM	STATE	FB/FO	TO	STATE	FB/FO	RNP	LEG TYPE
SPATE	NY	FB	DECKR	NY	FB		TF

OBSTRUCTION	COORDINATES	ELEV MSL	CONT OBS	AC	ROC	ADJUSTMENTS
TOWER	403604.41N/0740654.51W	727				
TERRAIN	403618.00N/0740630.00W	424	Y			

MRA	MOCA	PUB	MAA	D/D/I	MEA (1)	DIRECTION (1)	MEA (2)	DIRECTION (2)	GNSS MEA
	1800	N	17500						2100

COP	FIX MRA	FIX MCA	MTA
			N

SEGMENT REMARKS
NEW ROUTE

CHANGES-REASON

FAA FORM 8260-16 (01/14)

TRANSMITTAL OF AIRWAYS/ROUTES DATA

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AIRWAY NO or ROUTE
TK502

ROUTINE or DOCKET NO
10-AEA-20

FLIGHT CHECK	**DATE** PENDING	**OFFICE**		**NAME**
APPROVED	**DATE** 03/19/2011	**OFFICE** AJV-311	**TITLE** MANAGER	**NAME** WILLIE B MAYS for LISTER P GOODBILE

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Appendix A. Administrative Information

1. Distribution. This order is distributed in Washington headquarters to the branch level in the Offices of Aviation Policy and Plans, Aviation Research, Airport Safety and Standards, the Air Traffic Organization (Safety, En Route and Oceanic Services, Terminal Services, System Operations Services, Mission Support Services, and Technical Operations Services), and Flight Standards Service; to the National Flight Data Center Group (AJV-21), Airspace Regulations and ATC Procedures Group (AJV-11), and the National Airway Systems Engineering Group; to the Regulatory Standards Division; to the branch level in the regional Flight Standards and Airports Divisions; to the Air Traffic and Technical Operations Service Areas, to all Flight Inspection Field Offices; to the Europe, Africa, and Middle East Area Office; to all Flight Standards Field Offices; Special Mailing List ZVN-826; and Special Military and Public Addressees.

2. Terms, Definitions, and Acronyms. For the purpose of this order, flight procedures are identified as the functions for predetermining safe and practical methods of navigating aircraft that prescribe intended flight tracks, operational altitudes, and arrival/departure minimums. Flight procedures are subdivided into six general categories as follows: departure procedure, en route, instrument approach, missed approach, holding, and fix descriptions. The following words have the meaning shown:

a. May. Action is permissible.

b. Must. Action is mandatory.

c. Service Providers. Any organization, company, or person who develops Instrument Procedures.

d. Should. Action is desirable.

e. Will. Indicated a presumption that action is to be taken.

3. Acronyms and Abbreviations. Users of this order can refer to table A-1 for an alphabetical listing of frequently used acronyms and abbreviations:

Table A-1. Acronyms and Abbreviations

AAO	Adverse assumption obstacle
AAUP	Attention All Users Page
AC	Advisory Circular
ADF	Automatic direction finder
ADP	Automatic data processing
AF	Airway Facilities
AFD	Airport/Facility Directory
AFS	Flight Standards Service
AFSS	Automated Flight Service Station
AGL	above ground level

AIM	Aeronautical Information Manual
AIP	Aeronautical Information Publication
AIP	Airport Improvement Program
ALS	Approach light system
AOP	NAS Operations Program
AP	Autopilot
APO	Aviation policy and plans
APV	approach with vertical guidance
AR	Authorization Required
ARA	airborne radar approach
ARC	Airport Reference Code
ARDH	achieved reference datum height
ARP	airport reference point
ARSR	air route surveillance radar
ARTCC	Air Route Traffic Control Center
ASAT	Airspace Simulation Analysis Tool
ASIP	Airspace System Inspection Pilot
ASOS	Automated Surface Observing System
ASR	airport surveillance radar
ATC	Air Traffic Control
ATD	along track distance
ATO	Air Traffic Organization

ATRK	along-track
ATS	Air Traffic Service
AWOS	Automated Weather Observing System
AWOPM	All Weather Operations/Program Manager
BaroVNAV	Barometric vertical navigation
BC	back course
CA	course-to-altitude leg (RNAV)
CAT	category
CCW	counter-clockwise
CF	course-to-fix leg (RNAV)
CFR	Code of Federal Regulations
CG	climb gradient
CHDO	Certificate Holding District Office
CIP	capital investment plan
CL	course line
CMO	Certificate Management Office
CNF	computer navigation fix
CONUS	continental United States
COP	changeover point
CRC	cyclic redundancy check
CRM	collision risk model
CW	clockwise
CY	calendar year
DA	decision altitude

DEM	digital elevation model
DER	departure end of runway
DF	direction finder
DF	direct-to-fix leg (RNAV)
DG	descent gradient
DH	decision height
DMA	designated mountainous area
DME	distance measuring equipment
DOC	Department of Commerce
DoD	Department of Defense
DOF	digital obstruction file
DOT	Department of Transportation
DP	departure procedure
DR	dead reckoning
DRP	departure reference point
DTED	digital terrain elevation data
dTPP	digital Terminal Procedure Publication
EOVM	emergency obstruction video map
ESA	emergency safe altitude
ESV	expanded service volume
FAA	Federal Aviation Administration
FAC	final approach course
FAF	final approach fix

FAP	final approach point
FAS	final approach segment
FATO	final approach takeoff area
FB	fly-by
FCC	Federal Communications Commission
FD	Flight Director
FDC	Flight Data Center
FICO	Flight Inspection Field Central Operations
FIFO	Flight Inspection Field Office
FIOG	Flight Inspection Operations Group
FI/P	Flight Information/Permanent
FI/T	Flight Information/Temporary
FMO	Frequency Management Office
FMS	Flight Management System
FO	fly-over
FPAP	flight path alignment point
FPCP	flight path control point
FSD	Flight Standards Division
FSDO	Flight Standards District Office
FSS	Flight Service Station
FTIP	foreign terminal instrument procedure
FTP	fictitious threshold point

FY	fiscal year
GBAS	Ground Based Augmentation System
GCA	ground controlled approach
GLS	GBAS Landing System
GNSS	Global Navigation Satellite System
GP	glidepath
GPA	glidepath angle
GPI	ground point of intercept
GPS	Global Positioning System
GS	glide slope
HAA	height above airport
HAE	height above ellipsoid
HAL	height above landing area elevation
HAS	height above surface
HAT	height above touchdown
HCH	Heliport Crossing Height
HF	high frequency
HMAS	height of missed approach surface
HUD	heads-up display
IAC	initial approach course
IACC	Interagency Air Cartographic Committee
IAF	initial approach fix
IAP	instrument approach procedure

IAPA	Instrument Approach Procedure Automation
IFP	instrument flight procedures
IC	intermediate course
ICAO	International Civil Aviation Organization
IF	intermediate fix
IF	initial fix (RNAV)
IFP	instrument flight procedure
IFR	instrument flight rules
ILS	Instrument Landing System
IM	inner marker
IPDS	Instrument Procedure Development System
ISA	International Standard Atmosphere
KIAS	knots indicated airspeed
KTAS	knots true airspeed
LDA	localizer type directional aid
LF	low frequency
LNAV	lateral navigation
LOA	letter of agreement
LOB	line of business
LOC	localizer
LOM	locator outer marker
LP	localizer performance (without vertical guidance)
LPV	localizer performance with vertical guidance
LTP	landing threshold point

MAA	maximum authorized altitude
MAH	missed approach hold
MALS	medium intensity approach lighting system
MALSF	medium intensity approach lighting system with sequenced flashing
MALSR	medium intensity approach lighting system with runway alignment indicator lights
MAP	missed approach point
MCA	minimum crossing altitude
MDA	minimum descent altitude
MEA	minimum en route altitude
MHA	minimum holding altitude
MIA	minimum IFR altitude
MM	middle marker
MOA	memorandum of agreement
MOA	military operations area
MOC	minimum obstacle clearance
MOCA	minimum obstruction clearance altitude
MRA	minimum reception altitude
MSA	minimum safe/sector altitude
MSL	mean sea level
MT	mountainous terrain
MTA	minimum turning altitude
MV	magnetic variation
MVA	minimum vectoring altitude
MVAC	minimum vectoring altitude chart
NA	not authorized
N/A	not applicable
NAD	North American Datum
NAET	National Aircraft Evaluation Team
NAPT	National Airspace and Procedures Team
NAS	National Airspace System
NASR	National Airspace System Resources
NAVAID	navigational aid
NAVD	North American Vertical Datum
NCP	NAS Change Proposal
NDB	non-directional radio beacon
NES	NOTAM entry system
NFD	National Flight Database
NFDC	National Flight Data Center
NFDD	National Flight Data Digest
NGA	National Geospatial-Intelligence Agency

NGDC	National Geophysical Data Center
NGS	National Geodetic Survey
NM	nautical mile
NOAA	National Oceanic & Atmospheric Administration
NoPT	No procedure turn
NOS	National Ocean Service
NOTAM	Notices to Airmen
NPRM	Notice of Proposed Rulemaking
NTAP	Notices to Airmen Publication
NTS	NOTAM tracking system
OC	obstruction chart
OCA	obstacle clearance altitude
OCS	obstacle clearance surface
ODP	obstacle departure procedure
OE	obstacle evaluation
OFA	obstacle free area
OIS	obstacle identification surface
OM	outer marker
PA	precision approach
PAPI	precision approach path indicator
PAR	precision approach radar
PCG	positive course guidance

PCL	pilot controlled lighting
PEP	procedure evaluation pilot
PFAF	precise final approach fix
PinS	point in space
PO	proponent
POC	point of contact
POI	principal operations inspector
PRB	Procedures Review Board
PT	procedure turn
PTS	procedure tracking system
RA	radio altimeter
RAIL	runway alignment indicator light
RAPCON	radar approach control
RAPT	Regional Airspace and Procedures Team
RCL	runway centerline
RDOS	runway departure obstacle screening
RDP	radar data processing
RDP	reference datum point
REIL	runway end identifier lights
RF	radius-to-fix
RFO	responsible Federal official
RFSD	Regional Flight Standards Division
RNP	required navigation performance

RNAV	area navigation
ROC	required obstacle clearance
RSI	remote status indicator
RVR	runway visual range
RWY	runway
SDF	Simplified Directional Facility
SDF	stepdown fix
SIAP	standard instrument approach procedure
SID	standard instrument departure
SM	statute mile
SMGCS	Surface Movement Ground Control System
SMS	Safety Management System
SRM	safety risk management
SRTM	shuttle radar terrain model
SSALR	short simplified approach lighting system with runway alignment indicator lights
SSV	standard service volume
STAR	standard terminal arrival
SUA	special use airspace
TAA	terminal arrival area
TACAN	tactical air navigational aid

TCH	threshold crossing height
TDP	touchdown point
TDZ	touchdown zone
TDZE	touchdown zone elevation
TF	track-to-fix (RNAV)
THR	threshold
TPP	terminal procedure publication
TRACON	terminal radar approach control facility
TSO	technical standard order
UHF	ultra high frequency
USA	U.S. Army
USAASA	U.S. Army Aeronautical Services Agency
USAASDE	U.S. Army Aeronautical Services Detachment – Europe
USAF	U.S. Air Force
USCG	U.S. Coast Guard
USN	U.S. Navy
USNOF	U.S. NOTAM Office
VA	heading-to-an-altitude leg
VASI	visual approach slope indicator
VCA	visual climb area
VDA	vertical descent angle
VDP	visual descent point
VFR	visual flight rules

VGSI	visual glide slope indicator
VHF	very high frequency
VI	vector-to-intercept leg
VLF	very low frequency
VM	vector-to-a-manual termination
VMC	visual meteorological conditions
VNAV	vertical navigation
VOR	very high frequency omni-directional range
VOR/DME	VOR collocated with DME
VORTAC	VOR collocated with tactical air navigation
VPA	vertical path angle
VSDA	visual segment descent angle
WAAS	Wide Area Augmentation System
WP	waypoint
XTRK	crosstrack

4. Forms.

a. The following forms are provided in electronic form for use in the development and maintenance of flight procedures.

Table A-2. Forms

FAA Form Number	Title
8260-1	Flight Procedure Standards Waiver
8260-2	Radio Fix and Holding Data Record
8260-3	ILS-Standard Instrument Approach Procedure
8260-4	Radar Standard Instrument Approach Procedure
8260-5	Standard Instrument Approach Procedure
8260-7A	Special Instrument Approach Procedure
8260-7B	Special Instrument Procedure Authorization
8260-9	Standard Instrument Approach Procedure Data Record
8260-10	Standard Instrument Approach Procedure (Continuation Sheet)
8260-11	U.S. Army/U.S. Air Force ILS Standard Instrument Approach Procedure
8260-12	U.S. Army/U.S. Air Force Radar Standard Instrument Approach Procedure
8260-13	U.S. Army/U.S. Air Force Standard Instrument Approach Procedure
8260-15A	Takeoff Minimums and Textual Departure Procedure (DP)

8260-15B	Graphic Departure Procedure (DP)
8260-15C	Departure (Data Record)
8260-15D	Diverse Vector Area (DVA)
8260-15E	RNAV Departure Procedure Attention All Users Page (AAUP)
8260-16	Transmittal of Airways/Route Data
8260-20	U.S. Army/U.S. Air Force Standard Instrument Approach Procedure (Continuation Sheet)
8260-21A	U.S. Army Departure Procedures/Takeoff Minimums
8260-21B	U.S. Army/U.S. Air Force Standard Instrument Departure (SID)
8260-21C	U.S. Army/U.S. Air Force Departure (Data Record)
8260-30A	Simulator Evaluation Checklist
8260-30B	Obstacle Assessment Checklist
8260-30C	Flight Validation Checklist

5. Information Update. For your convenience, FAA Form 1320-19, Directive Feedback Information, is included at the end of this order to note any deficiencies found, clarifications needed, or suggested improvements regarding the contents of this order. When forwarding your comments to the originating office for consideration, please provide a complete explanation of why the suggested change is necessary.

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Appendix B. Flight Procedures References

The following publications (latest versions) listed within this appendix are provided for use as an information aide in the development of instrument flight procedures. This listing may not be all inclusive of new and/or recently canceled publications.

Table B-1. Orders

Number		Subject
	1000.1	Policy Statement of the Federal Aviation Administration
	1050.1	Policies and Procedures for Considering Environmental Impacts
	1350.15	Records Organization, Transfer, and Destruction Standards
	1370.52	Information Resources Policy
	1370.82	Information Systems Security Program
	1720.23	Distribution of Aeronautical Charts and Related Flight Information Publications
	1800.56	National Flight Standards Work Program Guidelines
	5010.4	Airport Safety Data Program
	5100.38	Airport Improvement Program (AIP) Handbook
	6030.20	Electrical Power Policy
	6050.32	Spectrum Management Regulations and Procedures Manual
	6560.10	Runway Visual Range (RVR)
	6700.20	Non-Federal Navigational Aids and Air Traffic Control Facilities
	6750.16	Siting Criteria for Instrument Landing Systems
	6750.24	Instrument Landing System and Ancillary Electronic Component Configuration and Performance Requirements
JO	6750.49	Maintenance of Instrument Landing System (ILS) Facilities
JO	6850.2	Visual Guidance Lighting Systems
JO	6850.5	Maintenance of Lighted Navigational Aids
	6950.2	Electrical Power Policy Implementation at National Airspace System Facilities
	7031.2	Airway Planning Standards #1 Terminal Air Navigation Facilities and Air Traffic Services
	7031.3	Airway Planning Standards #2 Air Route Traffic Control
	7032.5	Airport Surface Detection Equipment (ASDE-3) Air Traffic Service Operational Requirements

	7100.9	Standard Terminal Arrival
	7110.10	Flight Services
	7110.19	Designation Taxiways as Temporary Runways
	7110.22	Arrival and Departure Handling of High Performance Aircraft
JO	7110.65	Air Traffic Control
	7110.79	Charted Visual Flight Procedures
	7130.3	Holding Pattern Criteria
JO	7210.37	En Route Minimum IFR Altitude (MIA) Sector Charts
JO	7340.2	Contractions
	7350.2	Air Traffic Operational Coding System
JO	7350.8	Location Identifiers
JO	7400.2	Procedures for Handling Airspace Matters
	7450.1	Special Use Airspace Management System
JO	7610.4	Special Operations
	7900.2	Reporting of Electronic Navigation Aids an Communication Facilities Data to the NFDC
	7900.5	Surface Weather Observing
JO	7930.2	Notices to Airmen (NOTAMs)
	8200.1	United States Standard Flight Inspection Manual
	8240.47	Determination of Instrument Landing System (ILS) Glidepath Angle, Reference Datum Heights (RDH)
	8260.3	United States Standard for Terminal Instrument Procedures (TERPS)
VN	8260.4	ILS Obstacle Risk Analysis
	8260.15	United States Army Terminal Instrument Procedure Service
	8260.16	Airport Obstruction Surveys
	8260.23	Calculation of Radio Altimeter Height
	8260.26	Establishing and Scheduling Civil Public-Use Standard Instrument Procedure Effective Dates
	8260.31	Foreign Terminal Instrument Procedures
	8260.32	United States Air Force Terminal Instrument Procedures Service
	8260.42	United States Standard for Helicopter Area Navigation (RNAV)
	8260.43	Flight Procedures Management Program

	8260.46	Departure Procedure (DP) Program
	8260.49	Simultaneous Offset Instrument Approach (SOIA)
	8260.53	Standard Instrument Departures That Use Radar Vectors to Join RNAV Routes
	8260.55	Special Area Navigation Visual Flight Procedures
	8260.56	Diverse Vector Area (DVA) Construction
FS	8260.57	Oversight of Third Party Instrument Flight Procedure Service Providers
	8260.58	United States Standard for Performance-based Navigation (PBN) Instrument Procedure Design
	8260.60	Special Instrument Procedures
	8400.13	Procedures for the Approval of Special Authorization Category II and Lowest Standard Category I Operations
	8900.1	Flight Standards Information Management System (FSIMS)

Table B-2. Advisory Circulars

Number	Subject
FAA-H-8083-15	Instrument Flying Handbook
FAA-H-8261-1	Instrument Procedures Handbook
70/7460-1	Obstruction Marking and Lighting
90-42	Traffic Advisory Practices at Airports Without Operating Control Towers
90-80	Approval for Offshore Standard Approach Procedures (OSAP), Airborne Radar Approaches (ARA), and Helicopter En Route Descent Areas (HEDA)
90-100	U.S. Terminal and En Route Area Navigation (RNAV) Operations
90-101	Approval Guidance for RNP Procedures with SAAAR
90-105	Approval Guidance for RNP Operations and Barometric Vertical Navigation in the U.S. National Airspace System
90-110	Authorization Guidance for Development of Required Navigation Performance (RNP) Procedures with Authorization Required (AR) by Third Party Instrument Flight Procedure (IFP) Service Providers
90-111	Guidance for the Validation of Software Tools Used in the Development of Instrument Flight Procedures (IFPs) by Third Party Service Providers
90-112	Development and Submission of Special Instrument Procedures to the Federal Aviation Administration (FAA)

90-113	Instrument Flight Procedure Validation (IFPV) of Satellite-based Instrument Flight Procedures (IFPs)
91-14	Altimeter Setting Sources
91-16	Category II Operations-General Aviation Airplanes
91-54	Automatic Reporting Systems-Altimeter Setting and Other Operational Data
97-1	Runway Visual Range (RVR)
120-28	Criteria for Approval of Category III Weather Minima for Takeoff, Landing, and Rollout
120-29	Criteria for Approving Category I and Category II Landing Minima for FAR 121 Operators
120-91	Airport Obstacle Analysis
150/5070-6	Airport Master Plans
150/5200-28	Notices to Airmen (NOTAMs) for Airport Operators
150/5300-13	Airport Design
150/5340-1	Standards for Airport Markings
150/5340-26	Maintenance of Airport Visual Aid Facilities
150/5390-2	Heliport Design
150/5345-50	Specification for Portable Runway Lights
170-9	Criteria for Acceptance of Ownership and Servicing of Civil Aviation Interest(s) Navigational and Air Traffic Control Systems and Equipment

Table B-3. Title 14, Code of Federal Regulations (CFR)

Part	Subject
1	Definition and Abbreviations
71	Designations of Class A, Class B, Class C, Class D, and Class E Airspace Areas; Air Traffic Service Routes; and Reporting Points
73	Special Use Airspace
77	Objects Affecting Navigable Airspace
91	General Operating and Flight Rules
93	Special Air Traffic Rules
95	IFR Altitudes
97	Standard Instrument Approach Procedures

103	Ultra-light Vehicles
121	Operating Requirements: Domestic Flag and Supplemental Operations
125	Certification and Operations: Airplanes Having a Seating Capacity of 20 or More Passengers or a Maximum Payload Capacity of 6,000 Pounds or More; and Rules Governing Persons Onboard Such Aircraft
129	Operations: Foreign Air Carriers and Foreign Operators of U.S. – Registered Aircraft Engaged in Common Carriage
135	Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons Onboard Such Aircraft
139	Certification and Operations: Land Airports Serving Certain Air Carriers
150	Airport Noise Compatibility Planning
152	Airport Aid Program
157	Notice of Construction, Alteration, Activation, and Deactivation of Airports
161	Notice and Approval of Airport Nose and Access Restrictions
170	Establishment and Discontinuance Criteria for Air Traffic Control Services and Navigational Facilities
171	Non-Federal Navigation Facilities

Table B-4. Other Publications

Aeronautical Information Manual (AIM)
Airport Facility Directory
Airport Master Record, FAA Form 5010.1
Airspace Dockets
Area Charts
Graphic Notices and Supplemental Data
Low and High Altitude En Route Charts
National Flight Data Digest (NFDD)
National Plan of Integrated Airport System (NPIAS)
NACO Weekly Obstacle Memo
OC Charts
Sectional and Terminal Area Charts
Transmittal Letters (Instrument Approach Procedures)
USGS Topographical Charts

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Appendix C. Obstacle Accuracy Standards, Codes, and Sources

1. United States National Map Accuracy Standards. With a view to the utmost economy and expedition in producing maps that fulfill not only the broad needs for standard or principal maps, but also the reasonable particular needs of individual agencies, standards of accuracy for published maps are defined as follows:

a. Horizontal accuracy. For maps on publication scales larger than 1:20,000, not more than 10 percent of the points tested must be in error by more than 1/30 inch, measured on the publication scale; for maps on publication scales of 1:20,000 or smaller, 1/50 inch. These limits of accuracy must apply in all cases to positions of well-defined points only. Well-defined points are those that are easily visible or recoverable on the ground, such as the following: monuments or markers, such as bench marks, property boundary monuments; intersections of roads, railroads, etc.; corners of large buildings or structures (or center points of small buildings); etc. In general, what is well defined will also be determined by what can be plotted on the scale of the map within 1/100 inch. Thus, while the intersection of two roads or property lines meeting at right angles would come within a sensible interpretation, identification of the intersection of such lines meeting at an acute angle would obviously not be practicable within 1/100 inch. Similarly, features not identifiable upon the ground within close limits are not to be considered as test points within the limits quoted, even though their positions may be scaled closely upon the map. Timber lines, soil boundaries, etc. would be in this class.

b. Vertical accuracy, as applied to contour maps on all publication scales, must be such that not more than 10 percent of the elevations tested must be in error more than one-half the contour interval. In checking elevations taken from the map, the apparent vertical error may be decreased by assuming a horizontal displacement within the permissible horizontal error for a map of that scale.

c. Map accuracy testing may be accomplished by comparing the positions of points whose locations or elevations are shown upon it with corresponding positions as determined by surveys of a higher accuracy. Tests must be made by the producing agency that must also determine which of its maps are to be tested and the extent of such testing.

d. Published maps meeting these accuracy requirements must note this fact on their legends as follows: "This map complies with National Map Accuracy Standards."

e. Published maps whose errors exceed those stated before must omit all mention of standard accuracy from their legends.

f. Enlargements. When a published map is a considerable enlargement of a map drawing (manuscript) or of a published map, that fact must be stated in the legend. For example, "This map is an enlargement of a 1:20,000-scale map drawing "or" This map is an enlargement of a 1:24,000-scale published map."

g. Data Interchange. To facilitate ready inter-change and use of basic information for map construction among all Federal map-making agencies, manuscript maps and published maps, wherever economically feasible and consistent with intended map use, must conform to latitude and longitude boundary size, being 15, 7.5, or 3 ¾ minutes of latitude and longitude.

2. Accuracy Codes and Sources.

a. Accuracy Codes. Allowable accuracy of vertical and horizontal data was originally determined by a joint DoD/DOC/DOT task group in 1979. Accuracy codes established by that task group are no longer documented on 8260-series forms. Instead, document the vertical (see table C-2) and/or horizontal adjustment (see table C-1) applied [see paragraph 8-7-1b (11) & (15)].

Table C-1. Horizontal

Code	Tolerance	
1	+20 feet	(6 m)
2	+50 feet	(15 m)
3	+100 feet	(30 m)
4	+250 feet	(75 m)
5	+500 feet	(150 m)
6	+1000 feet	(300 m)
7	+½ NM	(900 m)
8	+1 NM	(1800 m)
9	Unknown	

Table C-2. Vertical

Code	Tolerance	
A	+3 feet	(1 m)
B	+10 feet	(3 m)
C	+20 feet	(6 m)
D	+50 feet	(15 m)
E	+125 feet	(38 m)
F	+250 feet	(75 m)
G	+500 feet	(150 m)
H	+1000 feet	(300 m)
I	Unknown	

b. Sources. The task group was provided specified accuracies from each of the following sources:

(1) Department of Commerce. National Ocean Service (NOS) develops Airport Obstruction Charts (OC) with accuracies as follows:

(a) Non Man-made objects and Man-made objects less than 200 feet AGL:

1. Primary surface and Primary transition surface areas within 500 feet (152 meters) of the primary surface +/- 20 feet (6 meters) horizontally and +/- 3 feet (1 meter) vertically. Code 1A

2. Primary transition areas further than 500 feet (152 meters) of the primary surface +/- 50 feet (15 meters) horizontally and +/- 20 feet (6 meters) vertically. Code 2C

3. Approach surface areas within 10,200 feet (3109 meters) of the runway end +/- 20 feet (6 meters) horizontally and +/- 3 feet (1 meter) vertically. Code 1A

4. Approach surface areas beyond 10,200 feet (3109 meters) from the runway end +/- 100 feet (30 meters) horizontally and +/- 50 feet (15 meters) vertically. Code 3D

5. Approach transition surface areas both within 500 feet (152 meters) of the approach surface and within 2,766 feet (843 meters) of the runway end +/- 20 feet (6 meters) horizontally and +/- 3 feet (1 meter) vertically. Code 1A

6. Approach transition surface areas further than 500 feet (152 meters) from an approach surface and within 10,200 feet (3109 meters) of the runway end +/- 50 feet (15 meters) horizontally and +/- 20 feet (6 meters) vertically. Code 2C

7. Approach transition surface areas further than 10,200 feet (3109 meters) from the runway end +/- 100 feet (30 meters) horizontally and +/- 50 feet (15 meters) vertically. Code 3D

8. Horizontal surface area +/- 50 feet (15 meters) horizontally and +/- 20 feet (6 meters) vertically. Code 2C

9. Conical surface area +/- 100 feet (30 meters) horizontally and +/- 50 feet (6 meters) vertically. Code 3D

(b) Man-made objects equal to or greater than 200 feet AGL:

1. Primary and Primary transition surface areas +/- 20 feet (6 meters) horizontally and +/- 3 feet (1 meter) vertically. Code 1A

2. Approach and Approach transition surface areas within 10,200 feet (3109 meters) of the runway end +/- 20 feet (6 meters) horizontally and +/- 3 feet (1 meter) vertically. Code 1A

3. Approach and Approach transition surface areas further than 10,200 feet (3109 meters) from the runway end +/- 50 feet (15 meters) horizontally and +/- 3 feet (1 meter) vertically. Code 2A

4. Horizontal and Conical surface areas +/- 50 feet (15 meters) horizontally and +/- 3 feet (1 meter) vertically. Code 2A

(2) Department of Transportation. FAA obstacle data for terrain structures are recorded on airspace, airport, and procedures records.

(a) Field inspections that employ a theodolite, +50 feet (15 meters) horizontally and +20 feet (6 meters) vertically. Code 2C.

(b) Obstruction Evaluations (OE): All obstacles, +250 feet (75 meters) horizontally and +50 feet (15 meters) vertically, unless a different accuracy is specified. Specified accuracies are for procedure planning and design and are subject to change upon verification. Code 4D.

(c) Weekly Obstacle Memo - Digital Obstacle File, accuracy codes are as specified. Code 1A to 9I.

(d) Airport Field Offices (AFO) may assign their own codes to obstacles on engineering drawings and Airport Layout Plan furnished to Regional Airports Division.

(e) Technical Operations (Tech Ops) Field Survey Navigation Aids, +20 feet (6 meters) horizontally and 3 feet (1 meter) vertically. Code 1A. Other obstacles, +50 feet (15 meters) horizontally and +10 feet (3 meters) vertically, unless verified to a higher accuracy. Code 2B.

(f) Flight inspection fly-by, +250 feet (75 meters) horizontally and +50 feet (15 meters) vertically. [See Order 8200.1.] Code 4D.

(g) Flight edits photogrammetry, +100 feet (30 meters) horizontally and +20 feet (6 meters) vertically, excluding moveable objects. Code 3C.

(h) Estimated by airport owner or operator, +½ NM (900 meters) horizontally and +500 feet (150 meters) vertically. Code 7G.

(i) World Aeronautical Chart (WAC), Sectional Chart, and VFR Terminal Chart.

1. Terrain features which are not marked as spot elevations (see table C-3):

Table C-3.

Chart	Horizontal	Vertical*
WAC	+1700 feet (500 m)	+500 feet (150 m)
Sec	+900 feet (275 m)	+250 feet (75 m)
VFR	+500 feet (150 m)	+250 feet (75 m)
		* ½ contour line

2. When mountain peaks are specifically marked by a spot elevation, the vertical accuracy is 20 feet (6 meters). Horizontal accuracy determined by chart type as specified in paragraph 2b.

3. When these charts are used to establish coordinates, it must be recognized that the Inter-Agency Air Cartographic Committee (IACC) charting standards permit displacement of objects to provide for relative depiction. To account for these additional errors, the horizontal accuracy factors must be doubled for manmade obstacles depicted on WAC, Sectional, and VFR charts.

(3) Department of Defense (DoD).

(a) National Geospatial-intelligence Agency (NGA):

1. Digital Terrain Elevation Data (DTED) (Level 0) 1 kilometer postings from 1:350,000 charts, +500 feet (150 meters) horizontally and +100 feet (30 meters) vertically Code 5E. DTED (Level 1), 100 meter postings +50 meters (164 feet) horizontally and +30 meters (98 feet) vertically. Code 4E. DTED (Level 2), 30 meter postings +23 meters (76 feet) horizontally and +18 meters (59 feet) vertically. Code 3E.

2. Shuttle Radar Terrain Model (SRTM): Level 1 (Foreign) 90 meter posting, equivalent to 1:250,000. Level 2 (CONUS) 30 meter posting, equivalent to 1:50,000. Level 1 and 2 accuracies are 20 meter horizontal and 16 meter vertical. Code 3D.

3. Vertical Obstruction Feature Database (VOFD). Populated using multiple sources. Obstruction attributes contain associated source accuracy code (Surveyed to Reported). Code 1A to 9I.

4. Joint Operations Graphic (JOG) - AIR, 2nd Series, (1:250,000 scale), +500 feet (150 meters) horizontally and +125 feet (38 meters) vertically. Code 5E.

5. Topographical Line Maps (TLM), (1:50,000 and 1:100,000 scale), +50 feet (15 meters) horizontally and +20 feet (6 meters) vertically. Code 2C.

(b) OC surveys conducted by U.S. Army Topographic Units must have the same accuracy standards as those developed by the Department of Commerce [see paragraph 2b(1)(a)].

(4) Department of Interior. U.S. Geological Survey data in magnetic tape files are claimed to be accurate to +1000 feet (300 meters) horizontally and +100 feet (30 meters) vertically. Code 6E. For the following charts, when obstacles or mountain peaks are specifically marked by a spot elevation, the vertical accuracy changes to +3 feet (1 meter). Otherwise, these charts have the following accuracies:

(a) Topographical charts (1:250,000 scale), +1000 feet (300 meters) horizontally and +125 feet (38 meters) vertically. Code 6E.

(b) Topographical charts (1:100,000 scale), +250 feet (75 meters) horizontally and +125 feet (38 meters) vertically. Code 4E.

(c) Topographical charts (1:62,500 or 1:63,360 scale), +250 feet (75 meters) horizontally and +50 feet (15 meters) vertically. Code 4D.

(d) Topographical charts [1:20,000, 1:24,000) (7 ½ min. Quad series), *and* 1:25,000], +40 feet (12 meters) horizontally and +20 feet (6 meters) vertically. Code 2C.

When these charts are used to establish coordinates, it must be recognized that the Inter-Agency Air Cartographic Committee (IACC) charting standards permit displacement of objects to provide for relative depiction. To account for these additional errors (as well as human scaling errors), the following accuracy factors will be used (see table C-4):

Table C-4. Landmarks Owner Depicted Marked on Chart Positions

1:250,000	7G	8H
1:62,500 or 1:63,360 (</= 40-foot contours)	4E	5E
1:62,500 or 1:63,360 (</= 80-foot contours)	4F	5F
1:20,000 or 1:24,000 (</ = 10-foot contours)	4D	5D
1:20,000 or 1:24,000 (</= 20-foot contours)	4D	5E
1 :100,000	5F	6G

(5) Digital Elevation Data. U.S. Geological Survey data for terrain elevations is typically based on Digital Elevation Models (DEM). Source documentation from the NOS supports the following horizontal and vertical accuracies; these values must be used in instrument procedure construction:

(a) DEM 7.5 Minute (Level 1), +13 meters (43 feet) horizontally and +14 meters (46 feet) vertically. Code 2D.

(b) DEM 7.5 Minute (Level 2), +13 meters (43 feet) horizontally and +17 meters (56 feet) vertically. Code 2E.

(c) DEM 1 Degree (1:250,000 scale), +130 meters (427 feet) horizontally and +30 meters (98 feet) vertically. Code 5E.

Appendix D. FAA Form 8260-2, Data Worksheet

Instructions for completing 8260-2, Data Worksheet, (see figure D-1) for requesting modification of fixes (including "Fix Use" updates) and/or holding patterns associated with existing 14 CFR Part 95 routes, 14 CFR Part 97 approaches, Special instrument procedures, SID or STARs. Complete this worksheet with as much information as possible and explain the addition or deletion in Block 10, Remarks. Submit this worksheet to the Office of Primary Responsibility (OPR) identified on the Form 8260-2 for proper action to be taken. For those fixes/holding patterns documented on older versions of Form 8260-2 that do not contain an OPR listed, contact the National Flight Data Center (NFDC), for a determination on where to submit this request.

Block 1. Requested Publication Date. Enter the desired effective date that coincides with the charting cycle (see Order 8260.26, appendix A). If the Form 8260-2 request is to be in conjunction with an airspace action, obtain the docket number from the Western, Central, or Eastern Service Area for En Route Operations, Airspace Group. For Form 8260-2 requests, allow at least 20 weeks lead-time from the desired effective date.

Block 2. Fix Name. Enter the 5-character pronounceable name obtained from ARTCC. Do not include "WP" as part of the name. If requesting holding at a navigational aid, enter the name and type of navigational aid.

Block 3. Fix Type. List the type(s) of fix, e.g., RADAR, WP, DME, INT (made up of crossing radials, bearings, or combinations of both).

Block 4. STATE. Enter the state in which the fix is located. See paragraph 8-5-2b.

Block 5. ICAO Region Code. Enter the ICAO Region code in which the fix is located. See paragraph 8-5-2d.

Block 6. Location. Latitude and longitude accurate to the hundredth of a second; e.g., 09.25 sec. List all navigational aids used for the fix makeup. Provide radials or bearings, DME, and distance values to the hundredth value; e.g., 347.23°; 08.37NM.

Block 7. Type of Action Required. Check applicable box to establish, modify, or cancel the fix. If there is no change to the fix, check "no change."

Block 8. Holding. Describe holding patterns required at fix. When climb-in-holding is required, provide detailed holding instructions including maximum altitude and maximum speed (if other than standard).

Block 9. Charting. Indicate required charting; i.e., terminal, SIDs, STARs, or en route charts.

Block 10. Remarks. List all procedures which use the fix and other uses of the fix; e.g., reporting points, etc. Include any other information that may assist in developing the fix. Justify the requirement for other than routine processing and charting.

Block 11. Point-of-Contact (POC). Self explanatory.

Figure D-1. FAA Form 8260-2, Data Worksheet

1. **Requested Publication Date:** ______________________________
2. **Fix Name:** ______________________________
3. **Fix Type:** ______________________________
4. **State:** ______________________________
5. **ICAO Region Code:** ______________________________
6. **Location:** ______________________________
7. **Type of (Fix) Action Required:** **Establish** ☐ **Modify** ☐ **Cancel** ☐ **No Change** ☐
8. **Holding:** ______________________________
   ____
9. **Charting:** ______________________________
10. **Remarks (Use additional paper if required):**

____

11. **Point of Contact (POC):**

    ATC Facility Name.

    POC's Name.

    Telephone Number.

    FAX Number.

    E-Mail Address

Appendix E. Radio Fix and Holding Data Record, FAA Form 8260-2

This appendix contains examples of Form 8260-2, Radio Fix and Holding Data Record (see figures E-1 through E-5).

Figure E-1.

RADIO FIX AND HOLDING DATA RECORD

NAME: PROVIDENCE VORTAC **STATE:** RI **COUNTRY:** US **ICAO REGION CODE:** K6

LATITUDE/LONGITUDE: 414327.64N/0713546.70W **TYPE:**

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** NO CHANGE

FIX MAKE-UP FACILITIES:

FAC	NAME	IDENT	TYPE	CLASS	MAG BRG	TRUE BRG	DME	DIST FROM FAC NM	FEET	MRA	MAA
1	PROVIDENCE	PVD	VORTAC	H							45000

HOLDING: **HOLDING TYPE OF ACTION:** MODIFY

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	DME	HOLDING ALTITUDES MIN	MAX	TEMPLATES MIN	MAX
1	S	PVD	VORTAC	181.00	001.00	R	1		1900	5000	4	5
2	N	PVD	VORTAC	344.00	164.00	R	1		3000	5000	4	5
3	NE	PVD	VORTAC	057.00	237.00	R	1 1/2		24000	39000	19	27
4	N	PVD	VORTAC	008.00	188.00	R	1		2100	10000	4	9
5	SW	PVD	VORTAC	234.00	054.00	R	1-1 1/2		11000	23000	9	19
6	SW		WP	235.41	055.41	R		8	11000	14000	9	10

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	200	200' AAO	414038.00N/0712947.00W	559	2C
2	200	TOWER (40-0125)	414812.00N/0713325.00W	1049	5D
4	200	TOWER (40-0125)	414812.00N/0713325.00W	1049	5D
5	230	TOWER (22-0325)	415213.00N/0711743.00W	1149	4D
6	230	TOWER (40-0113)	413423.00N/0713756.00W	851	2C

HOLDING RESTRICTIONS:
HOLDING LIMITED TO ESTABLISHED PATTERNS

REMARKS:
Assigned Facility MagVar: 14 degrees West

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	LOGAN			KBOS	BOSTON	MA
DP	WYLYY			KBOS	BOSTON	MA
DP	BRADLEY			KBDL	WINDSOR LOCKS	MA
DP	HANSCOM			KBED	BEDFORD	MA
DP	BEVERLY			KBVY	BEVERLY	MA
DP	NORWOOD			KOWD	NORWOOD	MA
DP	LAWRENCE			KLWM	LAWRENCE	MA
DP	STEWY			KACK	NANTUCKET	MA
EN ROUTE	V139		5			
EN ROUTE	V146					
EN ROUTE	V151					
EN ROUTE	V167					
EN ROUTE	V405					
EN ROUTE	V475					
EN ROUTE	J55		5			
EN ROUTE	J68					
EN ROUTE	J225					
IAP	ILS RWY 15R			KBOS	BOSTON	MA
IAP	VOR/DME RWY 15R			KBOS	BOSTON	MA
IAP	VOR/DME RWY 27			KBOS	BOSTON	MA
IAP	VOR/DME RWY 33			KBOS	BOSTON	MA
IAP	VOR/DME RNAV RWY 4R			KBOS	BOSTON	MA
IAP	NDB RWY 32			1B9	MANSFIELD	MA
IAP	ILS RWY 5			KEWB	NEW BEDFORD	MA
IAP	LOC BC RWY 23			KEWB	NEW BEDFORD	MA
IAP	NDB RWY 5			KEWB	NEW BEDFORD	MA
IAP	RNAV (GPS) RWY 5			KEWB	NEW BEDFORD	MA
IAP	LOC RWY 22			KUUU	NEWPORT	RI
IAP	VOR/DME OR GPS RWY 16		2	KUUU	NEWPORT	RI
IAP	ILS RWY 16			KOQU	NORTH KINGSTOWN	RI
IAP	VOR-A		4	KOQU	NORTH KINGSTOWN	RI
IAP	VOR RWY 34			KOQU	NORTH KINGSTOWN	RI
IAP	VOR/DME RNAV RWY 34			KOQU	NORTH KINGSTOWN	RI
IAP	LOC RWY 35			KOWD	NORWOOD	MA
IAP	VOR-A		1	KSFZ	PAWTUCKET	RI
IAP	VOR-B			KSFZ	PAWTUCKET	RI

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IAP	RNAV (GPS) RWY 5		KSFZ	PAWTUCKET	RI
IAP	ILS OR LOC/DME RWY 6		KPYM	PLYMOUTH	MA
IAP	RNAV (GPS) RWY 6		KPYM	PLYMOUTH	MA
IAP	NDB OR GPS RWY 30		KTAN	TAUNTON	MA
IAP	ILS OR LOC RWY 5		KPVD	PROVIDENCE	RI
IAP	ILS OR LOC RWY 23		KPVD	PROVIDENCE	RI
IAP	ILS RWY 5 CAT II		KPVD	PROVIDENCE	RI
IAP	ILS RWY 5 CAT III		KPVD	PROVIDENCE	RI
IAP	ILS RWY 34		KPVD	PROVIDENCE	RI
IAP	VOR/DME RWY 16		KPVD	PROVIDENCE	RI
IAP	VOR/DME RWY 23		KPVD	PROVIDENCE	RI
IAP	VOR/DME RWY 34		KPVD	PROVIDENCE	RI
IAP	VOR RWY 5		KPVD	PROVIDENCE	RI
IAP	VOR RWY 34		KPVD	PROVIDENCE	RI
IAP	RNAV (GPS) RWY 5		KPVD	PROVIDENCE	RI
IAP	RNAV (GPS) RWY 16		KPVD	PROVIDENCE	RI
IAP	VOR RWY 23		KGON	GROTON (NEW LONDON)	CT
IAP	RNAV (GPS) RWY 23		KGON	GROTON (NEW LONDON)	CT
STAR	GRAYM			BEDFORD	MA
STAR	NEWBE			NANTUCKET	MA
STAR	NORWICH	5	KBOS	BOSTON	MA
STAR	SCUPP		KBOS	BOSTON	MA
STAR	TEDDY			PROVIDENCE	RI
STAR	WOONS			BOSTON	MA

REQUIRED CHARTING: AREA, DP, EN ROUTE LOW, EN ROUTE HIGH, IAP, STAR

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 19 **DATE OF REVISION:** 03/14/2012

REASON FOR REVISION:
ADDED A TEMPLATE TO PAT 5, 265K HOLDING.
RAISED PAT 4, 200K MINIMUM HOLDING ALTITUDE.
ADDED HOLDING PAT 6.
CHANGED PAT 4, 230K CONTROLLING OBSTACLE.
CHANGED PAT 5, 265K CONTROLLING OBSTACLE.
UPDATED FIX USE.
ADDED FACILITY MAG VAR.

ATC COORDINATION: **DATE:** 01/09/2012 **FACILITY:** ZBW **NAME:** MICK CONTROL

INITIATED BY: **DATE:** **ORGANIZATION:** **NAME:**

OFFICE OF PRIMARY RESPONSIBILITY: AeroNav Products, AJV-353

APPROVED BY: **DATE:** 04/11/2012 **OFFICE:** AJV-353 **NAME:** MAXWELL MCDONALD

SIGNATURE:

DISTRIBUTION: **NFDC**
FIFO
FPT: AJV-E2
ARTCC: ZBW
ATC FACILITY: PVD APP CON
OTHER:

Figure E-2.

RADIO FIX AND HOLDING DATA RECORD

NAME: XMPLE **STATE:** TN **COUNTRY:** US **ICAO REGION CODE:** K7

LATITUDE/LONGITUDE: 383338.31N/0873152.98W **TYPE:** INT, DME, WP, RADAR

AIRSPACE DOCKET: 06-AEA-0108 **FIX TYPE OF ACTION:** ESTABLISH

FIX MAKE-UP FACILITIES:

FAC	NAME	IDENT	TYPE	CLASS	MAG BRG	TRUE BRG	DME	DIST FROM FAC NM	FEET	MRA	MAA
1	POCKET CITY	PXV	VORTAC	H	013.00	016.00	39.44	39.44		2000	17500
2	SAMSVILLE	SAM	VOR/DME	T	083.00	080.00		26.50		2000	17500
3	LAWRENCEVILLE	LWV	VOR/DME	T	165.79	164.75		12.99		2000	17500
4	MT CARMEL	AJG	NDB	MH	110.51	108.51		9.67		2000	17500
5	WASHINGTON	DCY	NDB	MH	248.71	246.71		20.44		2000	17500
6	BUG TUSSLE	I-BUG	LOC/DME		305.48	306.48	12.37	12.37		2000	6500

EXPANDED SERVICE VOLUME (ESV):

FAC IDENT	FAC TYPE	RADIAL/BEARING	DISTANCE	MIN ALTITUDE	MAX ALTITUDE
SAM	VOR/DME	R-083	27	2000	17500
LWV	VOR/DME	R-166	13	2000	17500

FIX RESTRICTIONS:
MCA V7 4500 NORTHBOUND
MRA V44 3000

HOLDING: **HOLDING TYPE OF ACTION:** ESTABLISH

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	DME	HOLDING ALTITUDES MIN	MAX	TEMPLATES MIN	MAX
1	S	LWV	VOR/DME	165.79	345.79	L	1	4	5000	10000	4	4
2	NW	I-BUG	LOC/DME	305.48	125.48	L	1		2500	6000	4	5
3	NW		WP	305.48	125.48	R		4	2500	15000	4	12

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	175	ANTENNA (27-0038)	383346.19N/0873200.26W	772	3C
1	230	TOWER (27-1005)	383357.24N/0873255.39W	1035	4D
2	200	POWERLINE (27-2337)	383347.20N/0873155.87W	521	2C
3	200	POWERLINE (27-2337)	383347.20N/0873155.87W	521	2C
UPN	310	ANTENNA (KBUG0024)	383255.49N/0873126.05W	2345	1A

REASON FOR NONSTANDARD HOLDING:
PAT 1 TRAFFIC AVOIDANCE
PAT 2 AIR TRAFFIC BOUNDARY

HOLDING RESTRICTIONS:
PAT 1 CHART 175K ICON
UNPLANNED HOLDING AUTHORIZED AT OR ABOVE 3400
COORDINATE WITH INDIANAPOLIS ARTCC PRIOR TO HOLDING AT XMPLE

PROCEDURES REQUIRING CLIMB-IN-HOLD:

PAT	PROCEDURE TITLE	AIRPORT IDENT	CITY	STATE
PAT 1	NDB RWY 18	KAJG	MT CARMEL	TN

REMARKS:
POCKET CITY (FAC 1) AND SAMSVILLE (FAC 2) USED TO ESTABLISH FIX COORDINATES.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	JETHRO	1, 2		KBUG	BUG TUSSLE	TN
DP	BODINE RNAV			KBUG	BUG TUSSLE	TN
EN ROUTE	V7	1, 2				
EN ROUTE	V44	1, 2				
IAP	NDB RWY 18	1, 2, 3	1	KAJG	MT CARMEL	TN
IAP	NDB RWY 5	3, 5		KDCY	WASHINGTON	TN

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IAP	ILS OR LOC RWY 13	1, 6	2	KBUG	BUG TUSSLE	TN
IAP	RNAV (GPS) RWY 13		3	KBUG	BUG TUSSLE	TN
STAR	CANNONBALL				PIXLEY	TN

REQUIRED CHARTING: AREA, DP, EN ROUTE LOW, IAP, STAR

COMPULSORY REPORTING POINT: LOW

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 05/11/2011

REASON FOR REVISION:

ATC COORDINATION: **DATE:** 03/23/2011 **FACILITY:** CRC APP CON **NAME:** SEYMOUR PLANES

INITIATED BY: **DATE:** **ORGANIZATION:** **NAME:**

OFFICE OF PRIMARY RESPONSIBILITY: AeroNav Products, AJV-353

APPROVED BY: **DATE:** 06/14/2011 **OFFICE:** AJV-353 **NAME:** FRANK FAIRCHILD

SIGNATURE:

DISTRIBUTION: **NFDC**
FIFO
FPT: AJV-E2
ARTCC: ZID, ZKC, ZMP
ATC FACILITY: CRC APP CON, AJG ATCT, BUG ATCT
OTHER: TN DOT, CITY OF BUG TUSSLE AVIATION AUTHORITY

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Figure E-3.

RADIO FIX AND HOLDING DATA RECORD

NAME: HOWTO **STATE:** MO **COUNTRY:** US **ICAO REGION CODE:** K3

LATITUDE/LONGITUDE: 394700.16N/0945501.01W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

HOLDING: **HOLDING TYPE OF ACTION:** ESTABLISH

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	DME	HOLDING ALTITUDES MIN	MAX	TEMPLATES MIN	MAX
1	NW		WP	347.08	147.08	R	1 1/2	4	3000	24000	5	17

CONTROLLING OBSTRUCTIONS:

PAT CODE	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY
1	200	TOWER (31-1165)	3948.00.34N/0945358.93W	2735	2B

HOLDING RESTRICTIONS:
HOLDING LIMITED TO ESTABLISHED PATTERN.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
IAP	RNAV (GPS) RWY 15		1	STJ	ST JOSEPH	MO
IAP	RNAV (GPS) RWY 33			STJ	ST JOSEPH	MO

REQUIRED CHARTING: IAP

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 01/12/2011

REASON FOR REVISION:

ATC COORDINATION: **DATE:** 11/01/2010 **FACILITY:** STJ APP CON **NAME:** ROGER OVER

INITIATED BY: **DATE:** **ORGANIZATION:** **NAME:**

OFFICE OF PRIMARY RESPONSIBILITY: AeroNav Products, AJV-353

APPROVED BY: **DATE:** 02/29/2011 **OFFICE:** AJV-353 **NAME:** GREGORY GRUMMAN

SIGNATURE:

DISTRIBUTION: **NFDC**
FIFO
FPT: AJV-C2
ARTCC: ZKC
ATC FACILITY: STJ APP CON,
OTHER: MO AVIATION DIRECTOR

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Figure E-4.

RADIO FIX AND HOLDING DATA RECORD

NAME: NITER OM **STATE:** TX **COUNTRY:** US **ICAO REGION CODE:** K4

LATITUDE/LONGITUDE: 325423.25N/0965449.89W **TYPE:** INT, DME

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** MODIFY

FIX MAKE-UP FACILITIES:

FAC	NAME	IDENT	TYPE	CLASS	MAG BRG	TRUE BRG	DME	DIST FROM FAC NM	FEET	MRA	MAA
1	NITER		OM		219.70	225.70		0.03		1900	5000
2	DALLAS	I-DAL	LOC/DME		309.64	315.64	5.59	5.59	33962	1900	5000
3	MAVERICK	TTT	VOR/DME	H	064.72	070.72		6.78		1900	5000

FIX RESTRICTIONS:
ILS Z RWY 13L, SPECIAL IAP, DAL, DALLAS, TX

REMARKS:
I-DAL DME LAT/LONG: 325025.01N/0965009.33W (DME SERVES RWY 13L & 31R)
COORDINATES REFLECT LOCATION ON LOC/AZ CENTERLINE ABEAM THE NITER OM. ACTUAL FACILITY LOCATION IS 325424.46N/0965448.42W.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
IAP	ILS RWY 13L	1, 2, 3		KDAL	DALLAS	TX
IAP	ILS Z RWY 13L	1, 2, 3		KDAL	DALLAS	TX

REQUIRED CHARTING: IAP

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 4 **DATE OF REVISION:** 01/03/2012

REASON FOR REVISION:
FAC 2 COURSE, DISTANCE, MRA AND MAA UPDATED.
FIX USE UPDATED.
LAT/LONG REVISED (MOVED 24 FT.)

ATC COORDINATION: **DATE:** 11/23/2011 **FACILITY:** DAL APP CON **NAME:** TIM MOVER

INITIATED BY: **DATE:** **ORGANIZATION:** **NAME:**

OFFICE OF PRIMARY RESPONSIBILITY: AeroNav Products, AJV-353

APPROVED BY: **DATE:** 02/14/2012 **OFFICE:** AJV-353 **NAME:** BENJAMIN BOEING

SIGNATURE:

DISTRIBUTION: **NFDC**
FIFO
FPT: AJV-C2
ARTCC: ZFW
ATC FACILITY: DAL ATCT, DFW ATCT
OTHER:

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Figure E-5.

RADIO FIX AND HOLDING DATA RECORD

NAME: THSWA **STATE:** OK **COUNTRY:** US **ICAO REGION CODE:** K4

LATITUDE/LONGITUDE: 351401.94N/0972759.96W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
IAP	RNAV (GPS) RWY 3			KOUN	NORMAN	OK
IAP	RNAV (GPS) RWY 21			KOUN	NORMAN	OK

REQUIRED CHARTING: IAP

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 04/10/2011

REASON FOR REVISION:

ATC COORDINATION: **DATE:** 12/25/2010 **FACILITY:** OKC APP CON **NAME:** VICTOR VECTOR

INITIATED BY: **DATE:** **ORGANIZATION:** **NAME:**

OFFICE OF PRIMARY RESPONSIBILITY: AeroNav Products, AJV-353

APPROVED BY: **DATE:** 07/21/2011 **OFFICE:** AJV-353 **NAME:** CHARLES CESSNA

SIGNATURE:

DISTRIBUTION: **NFDC**
FIFO
FPT: AJV-C2
ARTCC: ZFW
ATC FACILITY: OKC APP CON, OUN ATCT
OTHER:

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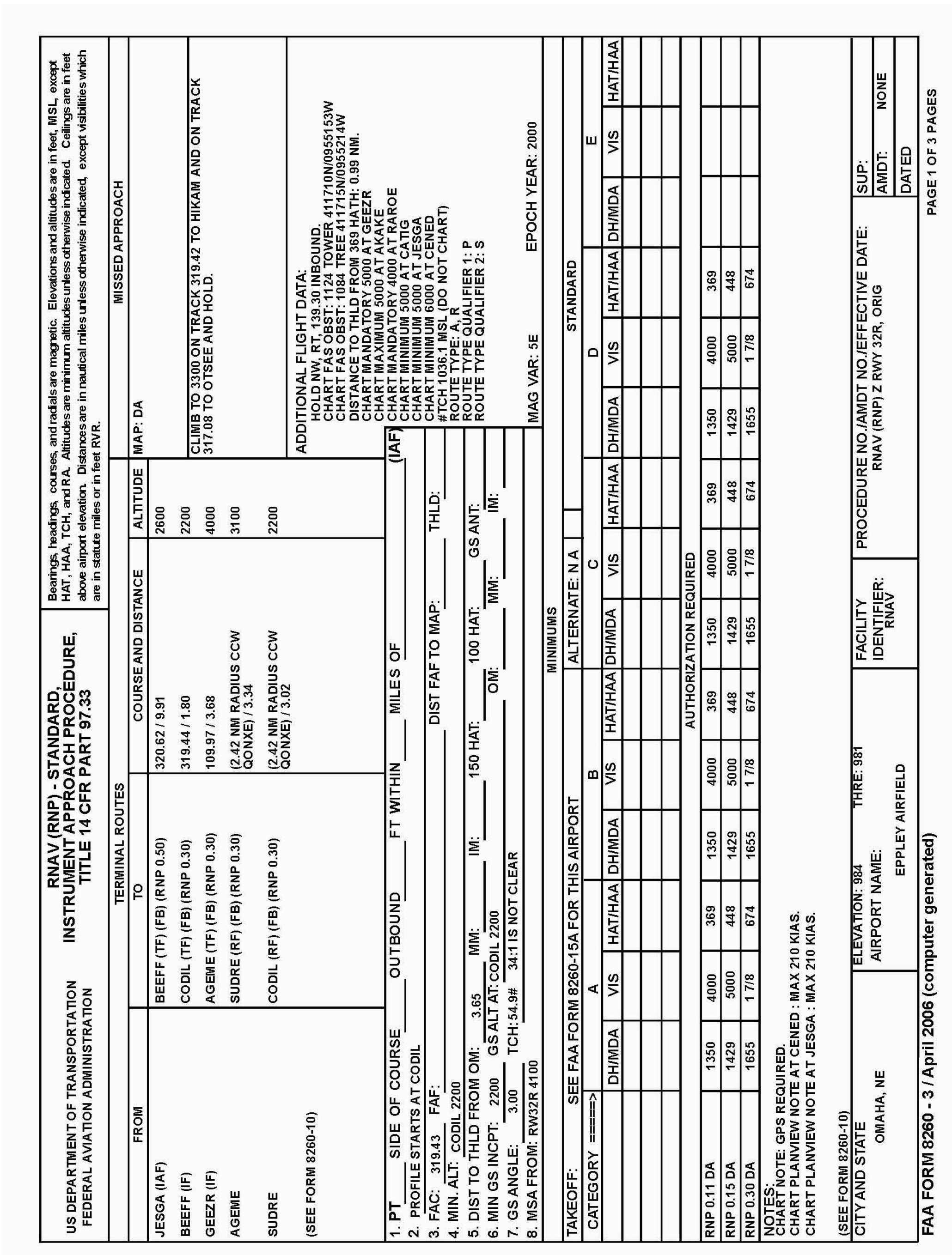
Appendix F. ILS and RNAV Standard Instrument Approach Procedure, FAA Form 8260-3

This appendix contains an example of Form 8260-3, ILS and RNAV Standard Instrument Approach Procedure (see figure F-1).

Figure F-1.



US DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

RNAV (RNP) - STANDARD,
INSTRUMENT APPROACH PROCEDURE,
TITLE 14 CFR PART 97.33

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
JESGA (IAF)	BEEFF (TF) (FB) (RNP 0.50)	320.62 / 9.91	2600
BEEFF (IF)	CODIL (TF) (FB) (RNP 0.30)	319.44 / 1.80	2200
GEEZR (IF)	AGEME (TF) (FB) (RNP 0.30)	109.97 / 3.68	4000
AGEME	SUDRE (RF) (FB) (RNP 0.30)	(2.42 NM RADIUS CCW QONXE) / 3.34	3100
SUDRE	CODIL (RF) (FB) (RNP 0.30)	(2.42 NM RADIUS CCW QONXE) / 3.02	2200
(SEE FORM 8260-10)			

MISSED APPROACH

MAP: DA

CLIMB TO 3300 ON TRACK 319.42 TO HIKAM AND ON TRACK 317.08 TO OTSEE AND HOLD.

ADDITIONAL FLIGHT DATA:
HOLD NW, RT, 139.30 INBOUND.
CHART FAS OBST: 1124 TOWER 411710N/0955153W
CHART FAS OBST: 1084 TREE 411715N/0955214W
DISTANCE TO THLD FROM 369 HATH: 0.99 NM.
CHART MANDATORY 5000 AT GEEZR
CHART MAXIMUM 5000 AT AKAKE
CHART MANDATORY 4000 AT RAROE
CHART MINIMUM 5000 AT CATIG
CHART MINIMUM 5000 AT JESGA
CHART MINIMUM 6000 AT CENED
#TCH 1036.1 MSL (DO NOT CHART)
ROUTE TYPE: A, R
ROUTE TYPE QUALIFIER 1: P
ROUTE TYPE QUALIFIER 2: S

MAG VAR: 5E EPOCH YEAR: 2000

1. PT ___ SIDE OF COURSE ___ OUTBOUND ___ FT WITHIN ___ MILES OF ___ (IAF)
2. PROFILE STARTS AT CODIL
3. FAC: 319.43 FAF: ___ DIST FAF TO MAP: ___ THLD: ___
4. MIN. ALT: CODIL 2200
5. DIST TO THLD FROM OM: 3.65 MM: ___ IM: ___ 150 HAT: ___ 100 HAT: ___ GS ANT: ___
6. MIN GS INCPT: 2200 GS ALT AT: CODIL 2200 OM: ___ MM: ___ IM: ___
7. GS ANGLE: 3.00 TCH: 54.9# 34:1 IS NOT CLEAR
8. MSA FROM: RW32R 4100

MINIMUMS

TAKEOFF: SEE FAA FORM 8260-15A FOR THIS AIRPORT ALTERNATE: N A STANDARD

CATEGORY =====>	A			B			C			D			E		
	DH/MDA	VIS	HAT/HAA	DH/MDA	VIS	HAT/HAA	DH/MDA	VIS	HAT/HAA	DH/MDA	VIS	HAT/HAA	DH/MDA	VIS	HAT/HAA
AUTHORIZATION REQUIRED															
RNP 0.11 DA	1350	4000	369	1350	4000	369	1350	4000	369	1350	4000	369			
RNP 0.15 DA	1429	5000	448	1429	5000	448	1429	5000	448	1429	5000	448			
RNP 0.30 DA	1655	1 7/8	674	1655	1 7/8	674	1655	1 7/8	674	1655	1 7/8	674			

NOTES:
CHART NOTE: GPS REQUIRED.
CHART PLANVIEW NOTE AT CENED : MAX 210 KIAS.
CHART PLANVIEW NOTE AT JESGA : MAX 210 KIAS.

(SEE FORM 8260-10)

CITY AND STATE	ELEVATION: 984 THRE: 981 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO./AMDT NO./EFFECTIVE DATE:	SUP:
OMAHA, NE	EPPLEY AIRFIELD	RNAV	RNAV (RNP) Z RWY 32R, ORIG	AMDT: NONE
				DATED

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ALL AFFECTED PROCEDURES REVIEWED?	COORDINATES OF FACILITIES	REQUIRED EFFECTIVE DATE
[ ] YES [X] NO		**ROUTINE**

COORDINATED WITH:

ATA	AAT	ALPA	APA	AOPA	NBAA	OTHER (specify)
X		X	X	X	X	X **ZMP, OMA APP CON, OMA ATCT, AMGR**

FLIGHT CHECKED BY

NAME:	FIFO	DATE:

DEVELOPED BY

NAME:	FIFO	DATE:
DONALD H. LANIER	**AJV-353**	**07/13/2011**

APPROVED BY

NAME:	FIFO	DATE:
GREGORY YAMAMOTO **MANAGER**	**AJV-353**	

CHANGES:

ORIG.

REASONS:

FPT REQUEST.

Appendix G. Radar – Standard Instrument Approach Procedure, FAA Form 8260-4

This appendix contains an example of Form 8260-4, Radar - Standard Instrument Approach Procedure (see figure G-1).

Figure G-1.

U.S. DEPARTMENT OF TRANSPORTATION -- FEDERAL AVIATION ADMINISTRATION
RADAR -- STANDARD INSTRUMENT APPROACH PROCEDURE -- FLIGHT STANDARDS SERVICE --TITLE 14 CFR PART 97.31

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH. and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

Initial approach minimum altitude(s) shall correspond with those established for enroute operation in the particular area or as set forth below. Positive identification must be established with the radar controller. From initial contact with radar to final authorized landing minimums, the instructions of the radar controller are mandatory except when; (A) Visual contact is established on final approach at or before descent to the authorized landing minimums; or (B) at pilot's discretion if it appears desirable to discontinue the approach.

Except when the radar controller may direct otherwise prior to final approach, a missed approach shall be executed as provided below when; (A) communications on final approach is lost for more than 5 seconds during a precision approach, or for more than 30 seconds during a surveillance approach; (B) directed by radar controllers; (C) visual contact is not established upon descent to authorized landing minimums; or (D) if landing is not accomplished.

RADAR TERMINAL AREA MANEUVERING SECTORS AND ALTITUDES *(Sectors and distances measured from radar antenna)*

FROM	T O	DISTANCE	ALTITUDE	DISTANCE	ALTITUDE	DISTANCE	ALTITUDE	DISTANCE	ALTITUDE	DISTANCE	ALTITUDE
AS ESTABLISHED BY THE CURRENT FORT MYERS ASR MINIMUM VECTORING ALTITUDE CHART											

MISSED APPROACH

MAP: **RWY 5, 23: THLD**

RWY 5: CLIMB TO 1000 THEN CLIMBING RIGHT TURN TO 2300 VIA RSW R-140 TO CORFU INT/RSW 10.00 DME AND HOLD SE, RT, 320.33 INBOUND.

RWY 23: CLIMB TO 1000 THEN CLIMBING LEFT TURN TO 2300 VIA RSW R-140 TO CORFU INT/RSW 10.00 DME AND HOLD SE, RT, 320.33 INBOUND.

MINIMUMS

TAKEOFF: SEE FAA FORM 8260-15A FOR THIS AIRPORT ALTERNATE: N A **STANDARD @**

CATEGORY =====>	A			B			C			D			E		
	DA/ MDA	VIS	HAT/HAA	DA/MDA	V I S	HAT/HAA	DA/MDA	V I S	HAT/HAA	DA/MDA	V I S	HAT/HAA	DA/MDA	V I S	HAT/HAA
ASR S-5	360	1	332	360	1	332	360	1	332	360	1	332			
ASR S-23	400	1	370	400	1	370	400	1	370	400	1 1/4	370			
CIRCLING	500	1	470	500	1	470	500	1 1/2	470	580	2	550			

NOTES:
RWY 5 FAF 4.5 MILES FROM THRESHOLD, MINIMUM ALTITUDE 1500, MINIMUM ALTITUDE 3 MILE FIX 1040. FINAL APPROACH COURSE 058. RECOMMENDED ALTITUDE 4 MILES 1340, 2 MILES 680.

RWY 23 FAF 5.0 MILES FROM THRESHOLD, MINIMUM ALTITUDE 1500; MINIMUM ALTITUDE 2 MILE FIX 580. FINAL APPROACH COURSE 238. RECOMMENDED ALTITUDE 4 MILES 1200, 3 MILES 880.

WHEN CONTROL TOWER CLOSED, ASR NA.

CHART NOTE: PROCEDURE NA AT NIGHT.
@NA WHEN CONTROL TOWER CLOSED.

LOST COMMUNICATIONS (ALL RWYS):**AS DIRECTED BY ATC ON INITIAL CONTACT.**

ADDITIONAL FLIGHT DATA

TDZE: **28**	RWY: **5**	TDZE: **30**	RWY: **23**
TDZE:	RWY:	TDZE:	RWY:

RWY 5: FAS OBST: 104 TREE 263104N/0814643W

RWY 23: FAS OBST: 137 TRMSN TWR 263332N/0814333W

MAG VAR: **4W** EPOCH YEAR: **00**

CITY AND STATE	ELEVATION: 30 / AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP / AMDT: / DATED:
FORT MYERS, FL	**SOUTHWEST FLORIDA INTL**	**RSW ASR**	**RADAR-2, ORIG**	AMDT: **NONE**

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ALL AFFECTED PROCEDURES REVIEWED?	COORDINATES OF FACILITIES	REQUIRED EFFECTIVE DATE
☐ YES ☒ NO	**263238.07N-0814605.86W**	**ROUTINE**

COORDINATED WITH:

ATA	AAT	ALPA	APA	AOPA	NBAA	OTHER (specify)
X	X	X	X	X	X	X **ZMA, RSW APP CON, RSW ATCT**

FLIGHT CHECKED BY

NAME:	FIFO	DATE:

DEVELOPED BY

NAME:	NFPG	DATE:

APPROVED BY

NAME: MANAGER	NFPG	DATE:

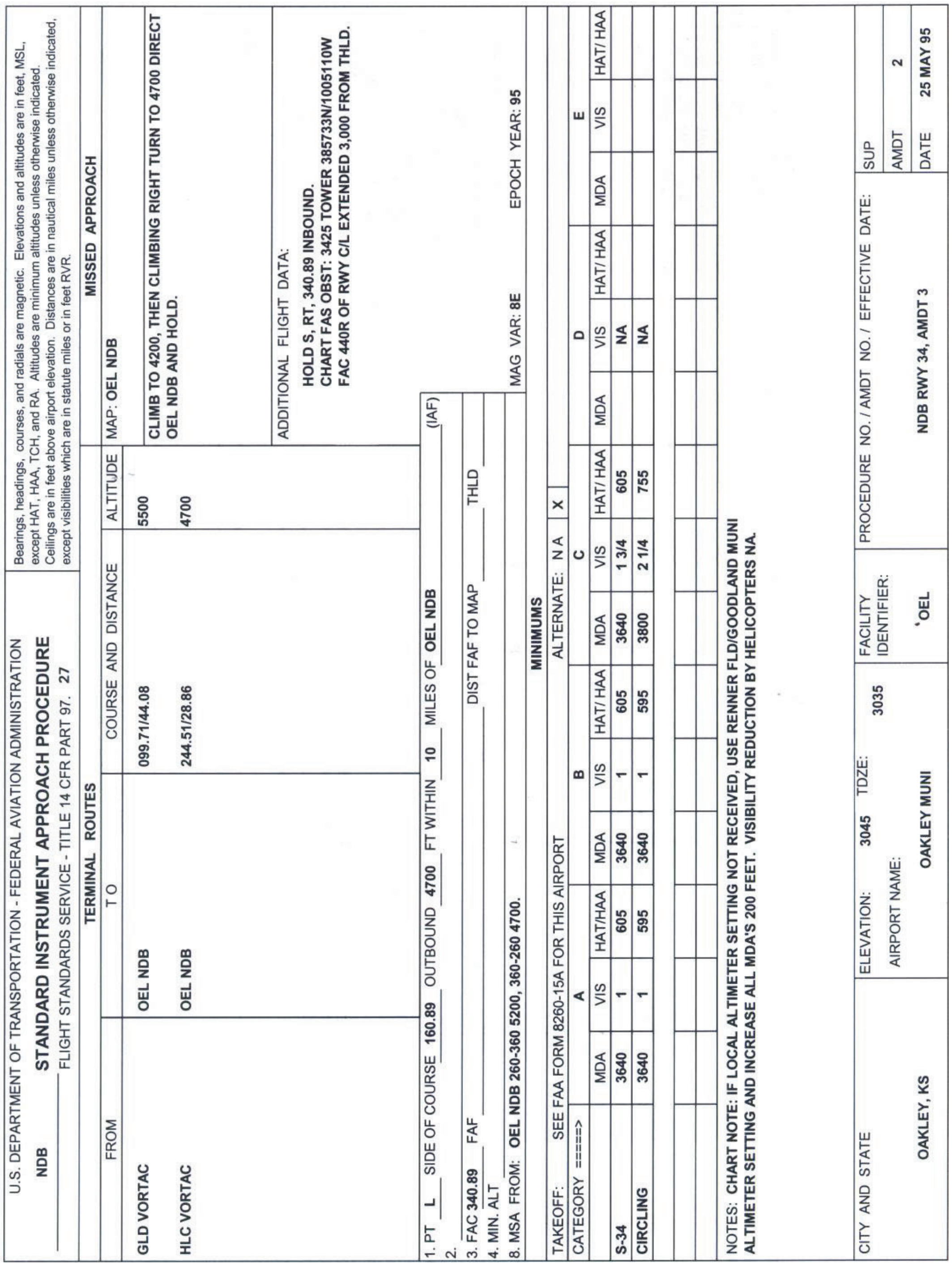
CHANGES:

REASONS:
ORIGINAL PROCEDURE REQUESTED BY ATL FPO.

Appendix H. Standard Instrument Approach Procedure, FAA Form 8260-5

This appendix contains an example of Form 8260-5, Standard Instrument Approach Procedure (see figure H-1).

Figure H-1.



U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

NDB **STANDARD INSTRUMENT APPROACH PROCEDURE**

FLIGHT STANDARDS SERVICE - TITLE 14 CFR PART 97. 27

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES				MISSED APPROACH
FROM	TO	COURSE AND DISTANCE	ALTITUDE	MAP: OEL NDB
GLD VORTAC	OEL NDB	099.71/44.08	5500	CLIMB TO 4200, THEN CLIMBING RIGHT TURN TO 4700 DIRECT OEL NDB AND HOLD.
HLC VORTAC	OEL NDB	244.51/28.86	4700	

ADDITIONAL FLIGHT DATA:
HOLD S, RT, 340.89 INBOUND.
CHART FAS OBST: 3425 TOWER 385733N/1005110W
FAC 440R OF RWY C/L EXTENDED 3,000 FROM THLD.

1. PT L SIDE OF COURSE 160.89 OUTBOUND 4700 FT WITHIN 10 MILES OF OEL NDB (IAF)
2.
3. FAC 340.89 FAF ___ DIST FAF TO MAP ___ THLD
4. MIN. ALT
8. MSA FROM: OEL NDB 260-360 5200, 360-260 4700. MAG VAR: 8E EPOCH YEAR: 95

MINIMUMS

TAKEOFF: SEE FAA FORM 8260-15A FOR THIS AIRPORT ALTERNATE: N A X

CATEGORY =====>	A			B			C			D			E		
	MDA	VIS	HAT/HAA	MDA	VIS	HAT/HAA	MDA	VIS	HAT/HAA	MDA	VIS	HAT/HAA	MDA	VIS	HAT/HAA
S-34	3640	1	605	3640	1	605	3640	1 3/4	605		NA				
CIRCLING	3640	1	595	3640	1	595	3800	2 1/4	755		NA				

NOTES: CHART NOTE: IF LOCAL ALTIMETER SETTING NOT RECEIVED, USE RENNER FLD/GOODLAND MUNI ALTIMETER SETTING AND INCREASE ALL MDA'S 200 FEET. VISIBILITY REDUCTION BY HELICOPTERS NA.

CITY AND STATE	ELEVATION: 3045 TDZE: 3035 / AIRPORT NAME	FACILITY IDENTIFIER	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE	SUP	AMDT	DATE
OAKLEY, KS	OAKLEY MUNI	OEL	NDB RWY 34, AMDT 3		2	25 MAY 95

ALL AFFECTED PROCEDURES REVIEWED?	COORDINATES OF FACILITIES	REQUIRED EFFECTIVE DATE
[X] YES [ ] NO		ROUTINE

COORDINATED WITH:

ATA	AAT	ALPA	APA	AOPA	NBAA	OTHER (specify)
[ ]	[ ]	[ ]	[ ]	[X]	[X]	[X] AMGR, ZDV

FLIGHT CHECKED BY		
NAME:	FIFO	DATE:
DEVELOPED BY		
NAME:	NFPG AVN-120	DATE: 12/16/2005
APPROVED BY		
NAME: MANAGER	NFPG AVN-120	DATE:

CHANGES:
1. REMOVED 'OR GPS' FROM PROCEDURE NAME.
2. DELETED FEEDER FROM ORION FIX.
3. REMOVED GOODLAND ALTIMETER NOTE.
4. ADDED BACKUP ALTIMETER NOTE.
5. RAISED MSA FOR 360-260 SECTOR FROM 4500 TO 4700.
6. REMOVED CEFZE CNF.
7. LOWERED STRAIGHT-IN MINS FROM: CATS A/B 3740-1 TO CAT A/B 3640-1, CAT C 3740-2 TO CAT C 3640-1 3/4.
8. LOWERED CIRCLING MINS FROM: CAT A/B 3740-1 TO CAT A/B 3640-1, CAT C 3980-2 3/4, TO CAT C 3800-2.

REASONS:
1. STAND-ALONE RNAV (GPS) SIAP PUBLISHED, CONCURRENT WITH PUBLICATION OF "RNAV (GPS) RWY 34" PROCEDURE.
2. NOT NEEDED, FIX IS WP FOR GPS NAVIGATION ONLY.
3. LOCAL AWOS AVAILABLE ON FIELD.
4. MKC FPO REQUIRES BACKUP ALTIMETER.
5. NEW CONTROLLING OBSTACLE.
6. NOT REQUIRED FOR NDB PROCEDURE.
7. LOCAL ALTIMETER INSTALLED; OFFSET FINAL DUE TO HIGHER NEW CONTROLLING OBSTACLE IN FINAL.
8. LOCAL ALTIMETER INSTALLED.

Appendix I. Special Instrument Approach Procedure, FAA Form 8260-7A and Special Instrument Procedure Authorization, FAA Form 8260-7B

This appendix contains an example of Form 8260-7A (see figure I-1) and Form 8260-7B (see figure I-2).

Figure I-1.

RNAV

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION -- FLIGHT STANDARDS SERVICE
SPECIAL INSTRUMENT APPROACH PROCEDURE -- FLIGHT STANDARDS SERVICE

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

When the instrument approach procedure of the above type is conducted at the below named airport, it must be conducted in accordance with a charted instrument approach procedure predicated on the specifications contained herein and as specified on accompanying FAA form 8260-7B (as amended). Minimum altitudes must correspond with those established for en route operation in the particular area or as set forth below. The information on this form is considered public and subject to disclosure under the Freedom of Information Act (FOIA).

SPECIFICATION - NOT FOR COCKPIT USE

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
SSR VORTAC	JIGMI (FB)	065.60/5.00	3400
JIGMI	BARLO (FB)	007.44/12.86	3400
BARLO	ZEKIM (FB)	315.85/5.85	3100
ZEKIM	GUMLE (FB)	315.80/8.77	3100
GUMLE (IAF)	SUVRE (FB)	318.61/28.00	3000
SUVRE (IF)	TOBOY (FB)	318.40/6.00	3000
TOBOY (FAF)	RIKKO (FB)	307.49/4.10	
(SEE FORM 8260-10)			

MISSED APPROACH

MAP: AGUCI

CLIMBING RIGHT TURN TO 3000 DIRECT COKKA AND THEN ON TRACK130.44 TO NAVIY, THEN ON TRACK 148.31 TO SUVRE THEN ON TRACK 138.40 TO GUMLE AND HOLD.

1. PT ___ SIDE OF COURSE ___ OUTBOUND ___ FT WITHIN ___ MILES OF ___ (IAF)
2. PROFILE STARTS AT SUVRE
3. FAC: 307.49 FAF: TOBOY DIST FAF TO MAP: 7.57 THLD: ___
4. MIN. ALT: SUVRE 3000, TOBOY 3000, RIKKO/3.50 NM TO AGUCI 2200
5. DIST TO THLD FROM OM: ___ MM: ___ IM: ___ 100 HAT: ___ GS ANT: ___
6. MIN GS INCPT: ___ GS ALT AT: ___ OM: ___ MM: ___ IM: ___
7. GS ANGLE: ___ TCH: ___
8. MSA FROM: AGUCI 9500

ADDITIONAL FLIGHT DATA:
HOLD NW, RT, 151.76 INBOUND
FAS OBST: 1299 AAO 591457N/1352906W
CHART GRAPHICALLY IN PLANVIEW AT COKKA:
CROSS AT OR ABOVE 2200

MAG VAR: 24E EPOCH YEAR: 2005

MINIMUMS

TAKEOFF: SEE FAA FORM 8260-15A FOR THIS AIRPORT ALTERNATE: N A X

CATEGORY =====>	A			B			C			D			E		
	DA/ MDA	VIS	HAT/HAA	DA/ MDA	VIS	HAT/ HAA	DA/ MDA	VIS	HAT/ HAA	DA/ MDA	VIS	HAT/ HAA	DA/ MDA	VIS	HAT/ HAA
CIRCLING	1620	3	1605	1620	3	1605		NA			NA				

NOTES:
CHART NOTE: CIRCLING NA NORTH OF RWY 8-26.
CHART NOTE: DME/DME RNP-0.3 NA.
CHART NOTE: MISSED APPROACH REQUIRES MINIMUM CLIMB OF 320 FEET PER NM TO 3000, DO NOT EXCEED 140 KIAS UNTIL COKKA.
CHART NOTE: PROCEDURE NA WHEN SURFACE WIND EXCEED 30 KNOTS.

CITY AND STATE	ELEVATION / AIRPORT NAME	FACILITY IDENTIFIER	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE	
HAINES, AK	ELEVATION: 15 TDZE: AIRPORT NAME: HAINES	RNAV	RNAV (GPS)-A, AMDT 1	SUP: AMDT: ORIG DATED: 04/08/2010

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ADDITIONAL FLIGHT DATA/NOTES CONTINUED:

SUBMITTED BY		
NAME: N/A	OFFICE	DATE:

FLIGHT CHECKED BY		
NAME: JAMES R.CHECKER	OFFICE AJW-33	DATE:

DEVELOPED BY		
NAME: JOHN T. JONES	OFFICE AJV-3754	DATE:

RECOMMENDED BY		
NAME: ROBERT P. SMITH	OFFICE AJV-3754	DATE:

APPROVED BY		
NAME: ALFRED B. FOWLER	AFS-400	DATE:

CHANGES:

1. REMOVED CHART NOTE: SPECIAL AIRCRAFT AND AIRCREW AUTHORIZATION REQUIRED.
2. MDA DECREASED FORM 1800 TO 1620 AND CLIMB GRADIENT TO REMAIN.
3. ADDED CHART NOTE:PROCEDURE NA WHEN THE WIND EXCEEDS 30 KNOTS.
4. REMOVED FLY VIS NOTE AND INCREASED VIS TO 3 SM.

REASONS:

1. REQUESTED BY AFS-460.
2. PER AFS-460 AND NEW FLIGHT CHECK.
3. PER AFS-460 AND NEW FLIGHT CHECK.
4. PER AFS-460.

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Figure I-2.

U.S. DEPARTMENT of TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

SPECIAL INSTRUMENT PROCEDURE AUTHORIZATION

FLIGHT STANDARDS SERVICE

CITY AND STATE	AIRPORT NAME / AIRPORT ID	PROCEDURE NAME
HAINES, AK	**HAINES (HNS) (PAHN)**	**RNAV (GPS)-A, AMDT 1**

ORIGINATING OFFICE
AFS-470, PERFORMANCE BASED FLIGHT SYSTEMS BRANCH

The following requirements may contain information considered proprietary by the operator.

a. Classification: Training and Operational Information Requirements.

(1) Instrument Procedure Requirements: This instrument approach procedure requires a missed approach with a minimum climb of 320 ft/nm to 3000 ft and an airspeed restriction to not exceed 140 KIAS until the COKKA waypoint. Procedure is for category A and B aircraft only;

(2) Operator Requirements: The operator must provide each pilot assigned to conduct operations using this approach procedure with ground training, flight training, and operational conducting operations using this procedure. The training must include?

(a) Aircraft specific operational capabilities and limitations associated with Technical Standard Order (TSO) C145a/C146a (or later revision that meets or exceeds the accuracy of this TSO/revision as approved by the Administrator) compliant Global Positioning System (GPS) and Wide Area Augmentation System (WAAS) receivers and navigation system displays;

(b) The unique requirements associated with the Haines, AK RNAV arrival, special instrument approach and departure procedures;

(c) Initial and annual aircraft flight demonstration(s) of pilot proficiency to include approach, missed approach, departure and en route procedures at Haines, AK.

(d) The operator must provide performance information to the pilot for use in the cockpit that will permit the pilot to determine whether the aircraft is capable, under the meteorological conditions that exist upon arrival at/departure from the destination.

(3) Inspector Guidance: The Principal Operations Inspector shall review the procedure with the certificate holder. During this review, the operator must show that each make/model/series (and variant) of aircraft intended for use on this procedure, has the performance capability to meet or exceed the aircraft missed approach/departure climb gradient. In addition the POI should evaluate the operator's proposed training program, and if applicable, operations manuals, checklists, or other operational documents, to determine their suitability for supporting safe IFR operations using this Instrument Approach Procedure. (See Operator Requirements above)

b. Classification: Equipment Requirement.

(1) Instrument Procedure Requirements: This procedure is designed for RNAV equipped aircraft that use advanced avionics, Technical Standard Order (TSO) C145a/C146a (or later revision that meets or exceeds the accuracy of this TSO/revision as approved by the Administrator) compliant Global Positioning System (GPS) and Wide Area Augmentation System (WAAS) receivers.

(2) Operator Requirements: The operator shall ensure that only aircraft equipped with dual TSO C145a/C146a (or later revision that meets or exceeds the accuracy of this TSO/revision as approved by the Administrator) compliant Global Positioning System (GPS) and Wide Area Augmentation System (WAAS) receivers are used to conduct this procedure.

(3) Inspector Guidance: The Principal Operations Inspector shall evaluate the operator's procedures, and if applicable, operations manuals, checklists, or other operational documents, to determine they include methods to ensure properly equipped aircraft are used for this Instrument Approach Procedure. (See Operator Requirements Above)

c. Classification: Airport Operations Requirement.

(1) Instrument Procedure Requirements: None.

(2) Operator Requirements: None.

(3) Inspector Guidance: None.

FAA Form 8260-7B (01/14) Page 1 of 2

U.S. DEPARTMENT of TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

SPECIAL INSTRUMENT PROCEDURE AUTHORIZATION

FLIGHT STANDARDS SERVICE

CITY AND STATE	AIRPORT NAME / AIRPORT ID	PROCEDURE NAME
HAINES, AK	**HAINES (HNS) (PAHN)**	**RNAV (GPS)-A, AMDT 1**

d. **<u>Classification</u>:** Simulator Requirements.

(1) **Instrument Procedure Requirements:** If an interactive training device or aircraft simulator is used it must contain Haines, AK features specific to this procedure.

(2) **Operator Requirements:** The interactive training device or aircraft simulator, if used by the operator, must contain Haines, AK features specific to this procedure, otherwise, an aircraft equipped with a TSO C145a/C146a (or later revision that meets or exceeds the accuracy of this TSO/revision as approved by the Administrator) compliant GPS and WAAS receiver must be used for pilot training and proficiency checks.

(3) **Inspector Guidance:** The Principal Operations Inspector shall evaluate the operator's program, procedures, and training equipment to determine their suitability for supporting safe IFR operations using this Instrument Approach Procedure (see Operator Requirements above). For operators without an approved training program, such as 14 CFR Part 91 and 135 single pilot operators, the POI will approve training and qualification procedures which meet the requirements listed in the operator's requirements paragraph above.

This Special Instrument Procedure shall be conducted in accordance with the instructions specified within and the operator's minima as specified in appropriate Letter of Authorization or operations/management specifications.

RECOMMENDED BY		
NAME:	OFFICE: **AFS-470**	DATE:
APPROVED BY		
NAME:	OFFICE: **AFS-400**	DATE:

________________ FAA Designator/Cert. No. ________________ hereby acknowledges receipt of this
Name/Operator/Carrier

Special Instrument Procedure to the following Airport Name/Identifier: ________________

Aircraft authorized (optional): ________________

DATE: ________ RECEIVED BY ________________ ________________
PRINTED NAME & TITLE SIGNATURE

BY THE DIRECTION OF THE ADMINISTRATOR ________________ ________________
PRINTED NAME & TITLE SIGNATURE

EFFECTIVE DATE: ________

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Appendix J. Standard Instrument Approach Procedure, FAA Form 8260-9

This appendix contains examples of Form 8260-9, Standard Instrument Approach Procedure Data Record, (see figures J-1 through J-8).

Figure J-1.

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
BLUE GRASS	KLEX	RNAV (GPS) RWY 27	ORIG	LEXINGTON	KY	974	RNAV

PART A: OBSTRUCTION DATA SEGMENTS

STRAIGHT-IN AREA
FROM 177/30 CW 357/30 — **TO** 117/8 CW 357/8

RNP / OBSTRUCTION	DISTANCE / COORDINATES	PAT / ELEV MSL	MAP / HORZ	VERT	HATh / AC	ROC	OCS	CG	HMAS / CGTA	ADJUSTMENTS	MIN ALT
1. TOWER (21-002125)	375250.86N/0841915.94W	2049	500	50	5D	1000					3100
2. TERRAIN	373439.00N/0841403.00W	1572 (1600)								AS 1500	3100

COMPUTATIONS
TF TURN FIX ALT KIAS KTAS HAA VKTW TR BA DTA COURSE CHANGE DVEB VEB OCS RF CENTER FIX/DISTANCE
SEGMENT REMARKS

STRAIGHT-IN AREA STEPDOWN
FROM 117/8 CW 357/8 — **TO** REBAA

RNP / OBSTRUCTION	DISTANCE / COORDINATES	PAT / ELEV MSL	MAP / HORZ	VERT	HATh / AC	ROC	OCS	CG	HMAS / CGTA	ADJUSTMENTS	MIN ALT
3. TOWER (21-000221)	380203.00N/0842339.00W	1998	500	50	5D	1000					3000
4. TERRAIN	375918.00N/0841612.00W	1057 (1100)								AS1500	2600

COMPUTATIONS
TF TURN FIX ALT KIAS KTAS HAA VKTW TR BA DTA COURSE CHANGE DVEB VEB OCS RF CENTER FIX/DISTANCE
SEGMENT REMARKS

LEFT BASE AREA
FROM 357/30 CW 087/30 — **TO** PHISH

RNP / OBSTRUCTION	DISTANCE / COORDINATES	PAT / ELEV MSL	MAP / HORZ	VERT	HATh / AC	ROC	OCS	CG	HMAS / CGTA	ADJUSTMENTS	MIN ALT
1. TOWER (21-002125)	375250.86N/0841915.94W	2049	500	50	5D	1000					3100
5. TERRAIN	372925.00N/0841758.50W	1615 (1600)								AS 1500	3100

COMPUTATIONS
TF TURN FIX ALT KIAS KTAS HAA VKTW TR BA DTA COURSE CHANGE DVEB VEB OCS RF CENTER FIX/DISTANCE
SEGMENT REMARKS

RIGHT BASE AREA
FROM 087/30 CW 177/30 — **TO** GRAVI

RNP / OBSTRUCTION	DISTANCE / COORDINATES	PAT / ELEV MSL	MAP / HORZ	VERT	HATh / AC	ROC	OCS	CG	HMAS / CGTA	ADJUSTMENTS	MIN ALT
3. TOWER (21-000221)	380203.00N/0842339.00W	1998	500	50	5D	1000					3100
6. TERRAIN	381751.00N/0842618.00W	1041 (1000)								AS1500	3100

COMPUTATIONS
TF TURN FIX ALT KIAS KTAS HAA VKTW TR BA DTA COURSE CHANGE DVEB VEB OCS RF CENTER FIX/DISTANCE
SEGMENT REMARKS

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
BLUE GRASS	KLEX	RNAV (GPS) RWY 27	ORIG	LEXINGTON	KY	974	RNAV

INITIAL

FROM			TO		
PHISH			REBAA		
RNP	**DISTANCE**	**PAT**	**MAP**	**HATh**	**HMAS**
	5.00				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
3. TOWER (21-000221)	380203.00N/0842339.00W	1998	500	50	5D	1000					3000
7. TERRAIN	375851.00N/0842351.00W	1090 (1100)								AS1500	2600

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

INITIAL

FROM			TO		
GRAVI			REBAA		
RNP	**DISTANCE**	**PAT**	**MAP**	**HATh**	**HMAS**
	5.00				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
8. TOWER (21-000127)	380724.00N/0842637.00W	1618	250	50	4D	1000				AT382	3000
9. TERRAIN	380203.00N/0842106.00W	1034 (1000)								AS1500	2500

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

INTERMEDIATE

FROM			TO		
REBAA (IF/IFAF)			SMAIL		
RNP	**DISTANCE**	**PAT**	**MAP**	**HATh**	**HMAS**
	6.20				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
3. TOWER (21-000221)	380203.00N/0842339.00W	1998	500	50	5D	1000					3000
10. TERRAIN	380000.00N/0842303.00W	1086 (1100)								AS1500	2600

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

OBSTACLE DATA SAME IN INTERMEDIATE FOR ALL SEGMENTS

FINAL: LPV

FROM			TO		
SMAIL			DA		
RNP	**DISTANCE**	**PAT**	**MAP**	**HATh**	**HMAS**
			DA	250	1037

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
11. ANT (KLEX0020)	380225.36N/0843607.39W	1014	50	20	2C	34:1				AC20	1224

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

FAA Form 8260-9(01/14)

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
BLUE GRASS	KLEX	RNAV (GPS) RWY 27	ORIG	LEXINGTON	KY	974	RNAV

FINAL: LPV

FROM			TO									
SMAIL			DA									
RNP	**DISTANCE**	**PAT**	**MAP**		**HATh**				**HMAS**			
			DA		250				1037			
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**	
11. ANT (KLEX0020)	380225.36N/0843607.39W	1014	50	20	2C	34:1				AC20	1224	

COMPUTATIONS
TF TURN FIX ALT KIAS KTAS HAA VKTW TR BA DTA COURSE CHANGE DVEB VEB OCS RF CENTER FIX/DISTANCE
SEGMENT REMARKS

FINAL: LNAV/VNAV

FROM			TO								
SMAIL			DA								
RNP	**DISTANCE**	**PAT**	**MAP**		**HATh**				**HMAS**		
			DA		398				1095		
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
12. ROD (KLEX0056)	380214.16N/0843549.08W	1091	20	3	1A	PDA				MA31	1372

COMPUTATIONS
TF TURN FIX ALT KIAS KTAS HAA VKTW TR BA DTA COURSE CHANGE DVEB VEB OCS RF CENTER FIX/DISTANCE
SEGMENT REMARKS
ISA -30

FINAL: LNAV

FROM			TO								
SMAIL			LAKWA/2.10 NM								
RNP	**DISTANCE**	**PAT**	**MAP**		**HATh**				**HMAS**		
	2.10										
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
13. TOWER (21-000894)	380339.00N/0843128.00W	1250	500	50	5D	250				DG67 RA63 AC50	1680

COMPUTATIONS
TF TURN FIX ALT KIAS KTAS HAA VKTW TR BA DTA COURSE CHANGE DVEB VEB OCS RF CENTER FIX/DISTANCE
SEGMENT REMARKS

FINAL: LNAV STEPDOWN

FROM			TO								
LAKWA/2.10 NM TO RW27			RW27								
RNP	**DISTANCE**	**PAT**	**MAP**		**HATh**				**HMAS**		
	2.80		RW27		386				1010		
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
14. TREE	380220.70N/0843426.79W	1109	50	20	2C	250				AT382	1360

COMPUTATIONS
TF TURN FIX ALT KIAS KTAS HAA VKTW TR BA DTA COURSE CHANGE DVEB VEB OCS RF CENTER FIX/DISTANCE
SEGMENT REMARKS

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
BLUE GRASS	KLEX	RNAV (GPS) RWY 27	ORIG	LEXINGTON	KY	974	RNAV

HOLD-IN-LIEU-OF-PT

FROM	TO
REBAA	REBAA

RNP	DISTANCE	PAT	MAP	HATh	HMAS
		P-4			

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
3. TOWER (21-000221)	380203.00N/0842339.00W	1998	500	50	5D	1000					3000
15. TERRAIN	380003.00N/0842303.00W	1073 (1100)								AS1500	2600

COMPUTATIONS

TF TURN FIX ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

MISSED APPROACH

PRIMARY: LPV

FROM	TO
DA	RW27

RNP	DISTANCE	PAT	MAP	HATh	HMAS

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
						ASC					3000
17. TOWER (21-0011960)	380148.00N/0844210.00W	1271	50	20	2C	1000					2300
18. TERRAIN	375951.00N/0843909.00W	1014 (1000)								AS 1500	2500

COMPUTATIONS

TF TURN FIX ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

PRIMARY: LNAV/VNAV

FROM	TO
DA	RW27

RNP	DISTANCE	PAT	MAP	HATh	HMAS

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
16. TREE (KLEX0037)	380203.00N/0842339.00W	1075	50	20	2C	ASC				AC20	3000
17. TOWER (21-0011960)	380148.00N/0844210.00W	1271	50	20	2C	1000					2300
18. TERRAIN	375951.00N/0843909.00W	1014 (1000)								AS 1500	2500

COMPUTATIONS

TF TURN FIX ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

PRIMARY: LNAV

FROM	TO
RW27	OVMAW

RNP	DISTANCE	PAT	MAP	HATh	HMAS

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
16. TREE (KLEX0037)	380203.00N/0842339.00W	1075	50	20	2C	ASC				AC20	3000
17. TOWER (21-001196)	380148.00N/0844210.00W	1271	50	20	2C	1000					2300
18. TERRAIN	375951.00N/0843909.00W	1014 (100)								AS 1500	2500

COMPUTATIONS

TF TURN FIX ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
BLUE GRASS	KLEX	RNAV (GPS) RWY 27	ORIG	LEXINGTON	KY	974	RNAV

PRIMARY: LNAV

FROM			TO									
RW27			OVMAW									
RNP	DISTANCE	PAT	MAP		HATh				HMAS			
OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
16. TREE (KLEX0037)	380203.00N/0842339.00W	1075	50	20	2C	ASC				AC20	3000
17. TOWER (21-001196)	380148.00N/0844210.00W	1271	50	20	2C	1000					2300
18. TERRAIN	375951.00N/0843909.00W	1014 (100)								AS 1500	2500

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

CIRCLING

CATEGORY A

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
14. TREE	380220.70N/0843426.79W	1.30	440	1109	50	20	2C	300		AT382	1420

CATEGORY B

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
14. TREE	380220.70N/0843426.79W	1.84	440	1109	50	20	2C	300		AT382	1420

CATEGORY C

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
14. TREE	380220.70N/0843426.79W	2.89	440	1109	50	20	2C	300		AT382	1420

CATEGORY D

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
19. TOWER (21-000484)	380243.00N/0843930.00W	3.78	560	1212	50	3	2A	300		HAA	1540

CIRCLING REMARKS

MSA

CENTER **RADIUS**

SECTOR	OBSTRUCTION	COORDINATES	BEARING	DISTANCE	ELEV MSL	AC	ROC	ADJUSTMENTS	MIN ALT

MSA REMARKS

NOTES/EXPLANATIONS FROM PROCEDURE SEGMENTS

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
BLUE GRASS	KLEX	RNAV (GPS) RWY 27	ORIG	LEXINGTON,	KY	974	RNAV

PART B SUPPLEMENTAL DATA

COMMUNICATIONS WITH
LEX TOWER, LEX APP, ZID ARTCC

WX SERVICE	LOCATION	HRS OF OPERATION	ALTIMETER SOURCE	DISTANCE	SERVICE A	ADJUSTMENTS
KLEX	KLEX	24	ASOS	0	Y	0
BACK-UP WX SERVICE	**LOCATION**	**HRS OF OPERATION**	**BACK-UP ALTIMETER SOURCE**	**DISTANCE**	**SERVICE A**	**ADJUSTMENTS**
ASOS	KFFT	24	KFFT	16.56	Y	62.45

WX REMARKS
RASS PRESSURE PATTERNS THE SAME, KLEX 980, KFFT 808

PRIMARY NAVAID	MONITOR POINT	HRS OF OPERATION/CAT
SECONDARY NAVAID	**MONITOR POINT**	**HRS OF OPERATION/CAT**

APPROACH AND RUNWAY LIGHTS	RUNWAY MARKINGS	RUNWAY VISUAL RANGE
RWY 04 MALSR, HIRL, TDZ, C/L, PAPI-4L	PRI-G	APPROACH
RWY 09 REIL, PAPI-4L	NPI-G	
RWY 22 ALS, HIRL, REIL, C/L (PCL), PAPI-4L	PRI-G	
RWY 27 REIL, PAPI-4L	BSC-G	

GLIDESLOPE ANGLE	ELEV RWY THRESHOLD	TCH	ELEV GS ANTENNA	DISTANCE FROM RWY	VGSI
3.00	974.0	43.0			3.00/43

FINAL APPROACH COURSE AIMING		FT FROM THRESHOLD	FT FROM CENTERLINE	DISPLACED THRESHOLD DISTANCE
RUNWAY THRESHOLD	X			
ON CENTERLINE	X			

CRITICAL TEMPARTURES

CRITICAL LOW	CRITICAL HIGH	ACT	AIRPORT ISA
-16C (4F)	47C (116F)	-23.72C	+9.05C

CRITICAL TEMPARTURES REMARKS
DESCENT RATE: STANDARD TEMP 974 HIGH TEMP 1126

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
BLUE GRASS	KLEX	RNAV (GPS) RWY 27	ORIG	LEXINGTON,	KY	974	RNAV

8260.3 VOLUME 1, "VISUAL PORTION OF FINAL" PENETRATIONS

LPV

20:1
1014 ANTENNA (KLEX0022) 380225.36N/0843607.39W (15.75) (LIGHTED)
34:1
1014 ANTENNA (KLEX0012) 380225.36N/0843607.39W (15.75) (LIGHTED)

LNAV/VNAV

20:1
1015 ANTENNA (KLEX0024) 380235.36N/0843606.39W (15.25) (LIGHTED)
34:1
1016 ANTENNA (KLEX0027) 380229.36N/0843609.39W (15.45) (LIGHTED)

LNAV

20:1
1017 ANTENNA (KLEX0029) 380224.46N/0843607.39W (15.55) (LIGHTED)
34:1
1018 ANTENNA (KLEX0028) 380225.36N/0843607.59W (15.65) (LIGHTED)

REMARKS

HELICOPTER 'VISUAL PORTION OF FINAL" PENETRATIONS

and/or

5280-FT "PROCEED VFR" SEGMENT LEVEL SURFACE AREA PENTRATIONS GLIDESLOPE ANGLE

REMARKS

PART C: GENERAL REMARKS
PRECIPITOUS TERRAIN ELVALUATION COMPLETED, 8260.3B VOL 1, PARA 3.3.2c 20:1 AND 34:1 PENTRATIONS (FPT NOTIFIED), VDP NOT ESTABLISHED 20:1 PENTRATIONS
TERPS PARAGRAPH 289 APPLIED TO 1367 BUILDING 380251N/0842957W

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
BLUE GRASS	KLEX	RNAV (GPS) RWY 27	ORIG	LEXINGTON,	KY	974	RNAV

PART D: AIRSPACE

DOCKET #

ALL DISTANCES TO 1/100NM; ELEVATION TO NEAREST FOOT; COORDINATES TO 1/100 SECOND; DEG TO 1/100 DEGREE

DISTANCE FROM	THLD	**TO 1000FT POINT**	3.09
WIDTH OF	FINAL	**SEGMENT AT 1000FT POINT**	1.69
TRUE COURSE OF	FINAL	**SEGMENT CONTAINING 1000FT POINT**	263.03
HIGH TERRAIN IN	FINAL	**SEGMENT CONTAINING 1000FT POINT**	1009
DISTANCE FROM	THLD	**TO 1500FT POINT**	4.70
WIDTH OF	FINAL	**SEGMENT AT 1500FT POINT**	2.00
TRUE COURSE OF	FINAL	**SEGMENT CONTAINING 1500FT POINT**	263.03
HIGH TERRAIN IN	FINAL	**SEGMENT CONTAINING 1500FT POINT**	1009

THRESHOLD COORDINATES (IF STR-IN) 380226.39N/0843616.18W

ARP COORDINATES 380211.4N/0843621.20W

RUNWAY APCH END AND DIST FURTHEST FROM ARP RWY04/0.62 NM

FAF/PFAF COORDINATES 380302.28N/0843006.47W

FIX NAME COORDINATES REBAA – 380347.16N/0842219.22W (IF/IAF), GRAVI – 380845.32N/0842304.84W, PHISH – 375848.99N/0842133.70W

AIRSPACE REMARKS
APPROACH/DRAWINGS ATTACHED

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
BLUE GRASS	KLEX	RNAV (GPS) RWY 27	ORIG	LEXINGTON,	KY	974	RNAV

PART E: PREPARED BY

NAME	TITLE	DATE	OFFICE
I.P. DRIBBLE	SPECIALIST	5/5/2010	AJW-3752

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Figure J-2.

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
BULTER COUNTY/K SCHOLTER FLD	KBTP	ILS OR OC RWY 8	AMDT 7A	BULTER	PA	1248	I-BTP

PART A: OBSTRUCTION DATA SEGMENTS

FINAL
FROM: EWC VORTAC
TO: BLAHM OM/INT
RNP | DISTANCE | PAT | MAP | HATh | HMAS

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
1. TERRAIN	404353.10N0800602.48W	1415	250	125	4E	2000				MT-415	3000
1. TERRAIN	404353.10N/0800602.48W	1415 (1400)								AS1500	2900

COMPUTATIONS
TF TURN FIX ALT | KIAS | KTAS | HAA | VKTW | TR | BA | DTA | COURSE CHANGE | DVEB | VEB OCS | RF CENTER FIX/DISTANCE
SEGMENT REMARKS

INTERMEDIATE
FROM: 10 NM
TO: BLAHM OM/INT
RNP | DISTANCE | PAT | MAP | HATh | HMAS

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
2. TOWER (39-00079)	404353.10N/0800602.48W	1843	20	3	1A	500				AT657	3000
1. TERRAIN	404353.10N/0800602.48W	1415 (1400)								AS1500	2900

COMPUTATIONS
TF TURN FIX ALT | KIAS | KTAS | HAA | VKTW | TR | BA | DTA | COURSE CHANGE | DVEB | VEB OCS | RF CENTER FIX/DISTANCE
SEGMENT REMARKS

PROCEDURE TURN
FROM: BLAHM OM/INT
TO: 10 NM
RNP | DISTANCE | PAT | HATh | HMAS

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
2. TOWER (39-00079)	404353.10N/0800602.48W	1843	20	3	1A	500				AT657	3000
1. TERRAIN	404353.10N/0800602.48W	1415 (1400)								AS1500	2900

COMPUTATIONS
TF TURN FIX ALT | KIAS | KTAS | HAA | VKTW | TR | BA | DTA | COURSE CHANGE | DVEB | VEB OCS | RF CENTER FIX/DISTANCE
SEGMENT REMARKS

FINAL: ILS
FROM: GS INTCP
TO: DA
RNP | DISTANCE | PAT | MAP: DA | HATh: 250 | HMAS: 1300

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
3. TREE	404622.31N/0795746.27W	1273	20	3	1A		34:1				1496

COMPUTATIONS
TF TURN FIX ALT | KIAS | KTAS | HAA | VKTW | TR | BA | DTA | COURSE CHANGE | DVEB | VEB OCS | RF CENTER FIX/DISTANCE
SEGMENT REMARKS

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
BULTER COUNTY/K SCHOLTER FLD	KBTP	ILS OR OC RWY 8	AMDT 7A	BULTER	PA	1248	I-BTP

FINAL: LOC

FROM			TO								
BLAHM OM			5.09 MILES AFTER BLAHM OM/INT								
RNP	**DISTANCE**	**PAT**	**MAP**		**HATh**				**HMAS**		
			5.09 MILES		250				1350		
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
4. TREE	404531.97N/08000120.64W	1350	50	20	2C	250					1600

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS
OBSTACLE #4 VERIFIED ON QUAD CHART (2C ACCURACY CODE APPLIED)

MISSED APPROACH

PRIMARY: ILS

FROM			TO								
DA/5.09 MILES			EWC VORTAC								
RNP	**DISTANCE**	**PAT**	**MAP**		**HATh**				**HMAS**		
	5.09		DA		250				1300		
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
5. TOWER (39-2083)	405501.21N/0800815.51W	1726	20	3	1A	1000					2800
6. TERRAIN	405439.00N/0800845.00W	1451 (1500								AS1500	3000

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

ALTERNATE: ILS

FROM			TO								
DA/5.09 MILES			GRACE								
RNP	**DISTANCE**	**PAT**	**MAP**		**HATh**				**HMAS**		
	5.09		DA		250				1300		
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
7. TOWER (39-1749)	405252.34N/0794748.00W	1775	20	3	1A	1000					3000
8. TERRAIN	405051.00N/0794748.02W	1447 (1400)								AS1500	2900

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
BULTER COUNTY/K SCHOLTER FLD	KBTP	ILS OR OC RWY 8	AMDT 7A	BULTER	PA	1248	I-BTP

PRIMARY: LOC

FROM			TO				
5.09 MILES			EWC VORTAC				
RNP	**DISTANCE**	**PAT**	**MAP**	**HATh**	**HMAS**		
			5.09 MILES	250	1300		

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
5. TOWER (39-2083)	405501.21N/0800815.51W	1726	20	3	1A	1000					2800
6. TERRAIN	405439.00N/0800845.00W	1451 (1500								AS1500	3000

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

ALTERNATE: LOC

FROM			TO		
5.09 MILES			GRACE		
RNP	**DISTANCE**	**PAT**	**MAP**	**HATh**	**HMAS**
	5.09 MILES				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
7. TOWER (39-1749)	405252.34N/0794748.00W	1775	20	3	1A	1000					3000
8. TERRAIN	405051.00N/0794748.02W	1447 (1400)								AS1500	2900

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

CIRCLING

CATEGORY A

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
9. TREE (KBTP0036)	406717.47N/0795520.75W	1.41	572	1505	20	3	1A	300			1820

CATEGORY B

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
9. TREE (KBTP0036)	406717.47N/0795520.75W	1.72	572	1505	20	3	1A	300			1820

CATEGORY C

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
9. TREE (KBTP0036)	406717.47N/0795520.75W	2.11	572	1505	20	3	1A	300			1820

CATEGORY D

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
9. TREE (KBTP0036)	406717.47N/0795520.75W	2.65	572	1505	20	3	1A	300			1820

CIRCLING REMARKS

CIRCLING RESTRICTION TO RWY 26 NOT APPLIED, FPT ADVISED

MSA

CENTER	RADIUS
EWC VORTAC	25 NM

SECTOR	OBSTRUCTION	COORDINATES	BEARING	DISTANCE	ELEV MSL	HORZ	VERT	AC	ROC	ADJUSTMENTS	MIN ALT
010-280	TOWER (42-002466)	402819.15N/0795939.55W	163.3	23.4	2049	20	3	1A	300		3100

SECTOR	OBSTRUCTION	COORDINATES	BEARING	DISTANCE	ELEV MSL	HORZ	VERT	AC	ROC	ADJUSTMENTS	MIN ALT
280-010	TOWER (39-000834)	410324.00N/0803843.00W	313.4	21.1	2538	500	50	5D	300		3600

MSA REMARKS

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
BULTER COUNTY/K SCHOLTER FLD	KBTP	ILS OR OC RWY 8	AMDT 7A	BULTER	PA	1248	I-BTP

NOTES/EXPLANATIONS FROM PROCEDURE SEGMENTS

PART B SUPPLEMENTAL DATA

COMMUNICATIONS WITH
PIT APP CON, AOO FSS

WX SERVICE	LOCATION	HRS OF OPERATION	ALTIMETER SOURCE	DISTANCE	SERVICE A	ADJUSTMENTS
PIT APP CON/AOO FSS	KBTP	24	KBTP	0	N	0
BACK-UP WX SERVICE	**LOCATION**	**HRS OF OPERATION**	**BACK-UP ALTIMETER SOURCE**	**DISTANCE**	**SERVICE A**	**ADJUSTMENTS**
AWOS-3	KPIT	24	KPIT	21.45	Y	55.64

WX REMARKS

PRIMARY NAVAID	MONITOR POINT	HRS OF OPERATION/CAT
I-BTP		

APPROACH AND RUNWAY LIGHTS	RUNWAY MARKINGS	RUNWAY VISUAL RANGE
RWY08: MALSF (PCL)	PIR-G	
RWY26: PAPI–4L	NPI-G	

GLIDESLOPE ANGLE	ELEV RWY THRESHOLD	TCH	ELEV GS ANTENNA	DISTANCE FROM RWY	VGSI
3.00	1235.1	52.9	873		3.00/52.9

FINAL APPROACH COURSE AIMING		FT FROM THRESHOLD	FT FROM CENTERLINE	DISPLACED THRESHOLD DISTANCE
RUNWAY THRESHOLD	X			
ON CENTERLINE	X			

CRITICAL TEMPARTURES

CRITICAL LOW	CRITICAL HIGH	ACT	APT ISA

CRITICAL TEMPARTURES REMARKS

8260.3 VOLUME 1, "VISUAL PORTION OF FINAL" PENETRATIONS

ILS/LOC
20:1
1310 ROD (KBTP0048) 404617.22N/0795753.84W (33.69) 1295 TREE (KBTP0006) 404648.58N/0795622.08W (7.93)
1285 TREE (KBTP0052) 404646.44N/0795623.76W (7.85) 1290 ROD ON OL POLE (KBTP0047) 404619.37N/0795747.63W (6.15)
1258 TREE (KBTP0023) 404645.11N/0795621.22W (2.09)

34:1
1273 TREE (KBTP0049) 4046222.31N/0795746.23W (17.66) 1278 TREE (KBTP0050) 404625.06N/0795751.51W (7.39)

REMARKS
VDP NOT ESTABLISHED DUE TO 20:1 PENETRATIONS AND FINAL FACILITY DOES NOT HAVE DME

HELICOPTER 'VISUAL PORTION OF FINAL" PENETRATIONS

and/or

5280-FT "PROCEED VFR" SEGMENT LEVEL SURFACE AREA PENTRATIONS GLIDESLOPE ANGLE

REMARKS

PART C: GENERAL REMARKS
PRECIPITOUS TERRAIN EVALUATION COMPLETED 04/18/2006, NO ADJUSTMENTS REQUIRED

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
BULTER COUNTY/K SCHOLTER FLD	KBTP	ILS OR OC RWY 8	AMDT 7A	BULTER	PA	1248	I-BTP

PART D: AIRSPACE

DOCKET #

ALL DISTANCES TO 1/100NM; ELEVATION TO NEAREST FOOT; COORDINATES TO 1/100 SECOND; DEG TO 1/100 DEGREE

DISTANCE FROM	THLD	TO 1000FT POINT	3.20
WIDTH OF	FINAL	SEGMENT AT 1000FT POINT	0.91
TRUE COURSE OF	FINAL	SEGMENT CONTAINING 1000FT POINT	071.95
HIGH TERRAIN IN	FINAL	SEGMENT CONTAINING 1000FT POINT	1254
DISTANCE FROM	THLD	TO 1500FT POINT	4.77
WIDTH OF	FINAL	SEGMENT AT 1500FT POINT	1.25
TRUE COURSE OF	FINAL	SEGMENT CONTAINING 1500FT POINT	071.95
HIGH TERRAIN IN	FINAL	SEGMENT CONTAINING 1500FT POINT	1254

THRESHOLD COORDINATES (IF STR-IN)	404628.39N/0799573.04W
ARP COORDINATES	404636.93N/0799556.09W
RUNWAY APCH END AND DIST FURTHEST FROM ARP	RWY08/0.46 NM
FAF/PFAF COORDINATES	404451.34N/0800354.52W
FIX NAME COORDINATES	

REMARKS
APPROACH/DRAWINGS ATTCHED

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
BULTER COUNTY/K SCHOLTER FLD	KBTP	ILS OR OC RWY 8	AMDT 7A	BULTER	PA	1248	I-BTP

PART E: PREPARED BY

NAME	TITLE	DATE	OFFICE
PRALE J. YPIGH	AERONAUTICAL INFORMATION SPECIALIST	03/30/2010	AJV-3561

Figure J-3.

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
GLACIER PARK INTL	KGPI	RNAV (RNP) RWY 20	ORIG	KALISPELL	MT	2977	RNAV

PART A: OBSTRUCTION DATA SEGMENTS

INITIAL (IAF)

FROM			TO								
OLIBY			KILLY								
RNP	**DISTANCE**	**PAT**	**MAP**		**HATh**				**HMAS**		
1.00	24.30										
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
1. 200' AAO	480503.60N/1145913.70W	6906	1000	3	6A	1000				AC3 PR227 AT811	9000
2. TERRAIN	480503.60N/1145913.70W	6706 (6700)								AS 1500	8200

COMPUTATIONS

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

INITIAL (IAF)

FROM			TO								
FIKAB			KILLY								
RNP	**DISTANCE**	**PAT**	**MAP**		**HATh**				**HMAS**		
1.00	26.20										
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
3. 200' AAO (GF-S-0700)	475716.00N/1145115.80W	6963	1000	3	6A	1000				AC3 PR252 AT782	9000
4. TERRAIN	475716.00N/1145115.80W	6763 (6800)								AS 1500	8300

COMPUTATIONS

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

INITIAL (IAF)

FROM			TO								
SKOTT			AKABY								
RNP	**DISTANCE**	**PAT**	**MAP**		**HATh**				**HMAS**		
1.00	26.20										
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
5. TOWER (30-000244)	474625.00N/1141607.00W	5674	100	20	3C	1000				AC20 PR101 AT2205	9000
6. TERRAIN	474625.00N/1141607.00W	5176 (5200)								AS 1500	6700

COMPUTATIONS

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
GLACIER PARK INTL	KGPI	RNAV (RNP) RWY 20	ORIG	KALISPELL	MT	2977	RNAV

INITIAL STEPDOWN

FROM	TO
AKABY	BUTSE

RNP	DISTANCE	PAT	MAP	HATh	HMAS
1.00	13.17				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
7. 200' AAO	475619.45N/1143025.71W	5759	50	20	2C	1000				AC20 PR184 AT2073	9000
8. TERRAIN	475619.45N/1143025.71W	5559 (5600)								AS 1500	7100

COMPUTATIONS

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE
AKABY - BUTSE	18000	300	408.00	15023.2	130.00	17.00	13.94					(EBXUA)/17.00NM

SEGMENT REMARKS

EBXUQ 4802.556N/11409.754W

INITIAL STEPDOWN

FROM	TO
BUTSE	KILLY

RNP	DISTANCE	PAT	MAP	HATh	HMAS
1.00	11.95				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
9. 200' AAO	480227.00N/1143354.00W	6159	50	20	2C	1000				AC20 PR150 AT167	9000
10. TERRAIN	480227.00N/1143354.00W	5959 (6000)								AS 1500	7500

COMPUTATIONS

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE
BUTSE – KILLY	17177	300	403.10	14200.2	130.00	17.00	13.70					(EBXUA)/17.00NM

SEGMENT REMARKS

EBXUQ 4802.556N/11409.754W

INITIAL (IAF)

FROM	TO
ANGIL	HUNER

RNP	DISTANCE	PAT	MAP	HATh	HMAS
0.40	26.20				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
11. 200' AAO	475448.00N/1141448.00W	4644	50	20	2C	1000				AC20 AT4336	10000
12. TERRAIN	475448.00N/1141448.00W	3852 (3900)								AS 1500	5400

COMPUTATIONS

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

RNP AT ANGIL 0.40, MAX 230 KTS AT ANGIL

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
GLACIER PARK INTL	KGPI	RNAV (RNP) RWY 20	ORIG	KALISPELL	MT	2977	RNAV

INITIAL STEPDOWN

FROM	TO
HUNUR	BUTSE

RNP	DISTANCE	PAT	MAP	HATh	HMAS
0.40	16.78				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
13. 200' AAO	475118.00N/1142603.00W	5365	50	20	2C	1000				AC20 PR159 AT2456	9000
14. TERRAIN	475118.00N/1142603.00W	5165 (5200)								AS 1500	6700

COMPUTATIONS

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE
HUNUR – BUTSE	18000	230	312.80	15023.2	130.00	7.90	19.90					(XAQJO)/7.90NM

SEGMENT REMARKS

RNP 0.40 AT HUNUR, MAX 230 KTS AT HUNUR, XAQJO 4759.675N/11422.611W

INITIAL STEPDOWN

FROM	TO
KILLY	QIGVO

RNP	DISTANCE	PAT	MAP	HATh	HMAS
0.40	9.61				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
15. 200' AAO	481048.00N/1143151.00W	5633	50	20	2C	1000				AC20 DG947	7600
16. TERRAIN	481048.00N/1143151.00W	5433 (5400)								AS 1500	6900

COMPUTATIONS

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

INTERMEDIATE

FROM	TO
QIGVO	RAPOY

RNP	DISTANCE	PAT	MAP	HATh	HMAS
0.40	6.00				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
17. 200' AAO	482239.00N/1142400.00W	4087	50	3	2A	1000				AC3 VEB742 DG1568	6900
18. TERRAIN	482239.00N/1142400.00W	3887 (3900)								AS 1500	5400

COMPUTATIONS

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

MAX 230 KTS AT RAPOY

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
GLACIER PARK INTL	KGPI	RNAV (RNP) RWY 20	ORIG	KALISPELL	MT	2977	RNAV

INTERMEDIATE STEPDOWN

FROM			TO		
RAPOY			LELKE		
RNP	**DISTANCE**	**PAT**	**MAP**	**HATh**	**HMAS**
0.40	6.40				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
19. 200' AAO	482514.00N/1142354.00W	4587	50	3	2A	500				AC3 VEB337 DG573	6000
20. TERRAIN	482514.00N/1142354.00W	4387 (4400)								AS 1500	5900

COMPUTATIONS

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE
RAPOY – LELKE	8416	230	268.7	5439.2	74.39	5.00	18.95			4597.68	21.78	(VOGCU)/5.00NM

SEGMENT REMARKS

MAX 230 KTS AT RAPOY, VOGCU 4821.525N/11417.587W

INTERMEDIATE STEPDOWN

FROM			TO		
LELKE			IDAYEL		
RNP	**DISTANCE**	**PAT**	**MAP**	**HATh**	**HMAS**
0.40	2.13				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
21. 200' AAO	482718.00N/1141721.00W	4239	50	20	2C	500				AC20 VEB175 DG766	5700
22. TERRAIN	482718.00N/1141721.00W	3959 (4000))								AS 1500	5500

COMPUTATIONS

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE
6381	230	259.3	3404.2	54.04	5.00	15.99						(VOGCU)/5.00NM

SEGMENT REMARKS

MAX 230 KTS AT RAPOY, VOGCU 4821.525N/11417.587W

FINAL

FROM			TO		
IDAYE			OYIKA		
RNP	**DISTANCE**	**PAT**	**MAP**	**HATh**	**HMAS**
0.10-0.30	0.68				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
						ASC					GP5474

COMPUTATIONS

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

FINAL SEGMENT LONGER THAN 7.50 NM WHEN VEB ROC IS APPLIED IN THE INTERMEDIATE IAW 8260.52 PARA 2.9; REQUEST APPROVAL FROM AFS FOR FINAL SEGMENT OF 8.22 NM, WITH VEB ROC APPLIED IN ALL INTERMEDIATE SEGMENTS

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
GLACIER PARK INTL	KGPI	RNAV (RNP) RWY 20	ORIG	KALISPELL	MT	2977	RNAV

FINAL

FROM			TO								
OYIKA			TAGUY								
RNP	**DISTANCE**	**PAT**	**MAP**		**HATh**				**HMAS**		
0.10-0.30	4.04										
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
						ASC					GP4147

COMPUTATIONS

RE SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE
OYIKA – TAGUY	5474	165	183.06	2497.2	50.00	2.44	17.99					(YOTUV)/2.44NM

SEGMENT REMARKS
YOTUV 4823.407N/11414.796W

FINAL

FROM			TO								
TAGUY			RW20								
RNP	**DISTANCE**	**PAT**	**MAP**		**HATh**				**HMAS**		
0.10	3.50		DA		367				3081		
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
23. TREE (KGPIL013)	481938.72N/1141409.51W	3068	20	3	1A	ASC		235	6900	AC3 MA43	3344

COMPUTATIONS

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS
MISSED APPROACH REQUIRES MINIMUM CLIMB RATE OF 235 FT PER NM TO 6900, OBSTACLE 27 PENETRATES RNP 0.10 MISSED APPROACH BY 365.33 FT REQUIRING AN MDA ADJUSTMENT OF 273 FT IS BUT IS MIGATED BY AN MDA
ADJUSTMENT OF 43 FT AND A CLIMB GRADIENT OF 233 (ROUNDED TO 235) FT PER NM TO 6900 FT; CTA (3344-50) + (235 X 15.04 NM) = 6828

FINAL

FROM			TO								
TAGUY			RW20								
RNP	**DISTANCE**	**PAT**	**MAP**		**HATh**				**HMAS**		
0.30	3.50		DA		469				3109		
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
24. 100' TREE	482004.95N/1141449.03W	3089	50	20	2C	ASC		226	6900	AC20 MA52	3446

COMPUTATIONS

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS
MISSED APPROACH REQUIRES MINIMUM CLIMB RATE OF 235 FT PER NM TO 6900, OBSTACLE 27 PENETRATES RNP 0.30 MISSED APPROACH BY 358.39 FT REQUIRING AN MDA ADJUSMENT OF 268 FT BUT IS MITIGATED BY AN MDA ADJUSTMENT OF 523 FT AND A CLIMB GRADIENT OF 226 FT PER NM TO 6900 FT; TO SIMPLIFY THIS PROCEDURE AND PUBLISH ONLY ONE CLIMB GRADIENT NOTE, THE HIGHEST VALUE REQUIRED FOR RNP 0.10 IS USE,. PUBLISHED CLIMB GRADIENT IS 235 FT PER NM

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
GLACIER PARK INTL	KGPI	RNAV (RNP) RWY 20	ORIG	KALISPELL	MT	2977	RNAV

FINAL

FROM			TO			
TAGUY			RW20			
RNP	**DISTANCE**	**PAT**	**MAP**	**HATh**	**HMAS**	
0.30	3.50		DA	685	3297	

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
24. 100' TREE	482004.95N/1141449.03W	3089	50	20	2C	ASC		226	6900	AC20 MA268	3662

COMPUTATIONS

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

OBSTACLE 27 PENETRATES RNP 0.30 MISSED APPROACH BY 358.39 FT REQUIRING AN MDA ADJUSMENT OF 268 FT, NO CLIMB GRADIENT IS REQUIREDE

PRIMARY

FROM			TO		
DA			CAUGH		
RNP	**DISTANCE**	**PAT**	**MAP**	**HATh**	**HMAS**
1.00	5.8				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
						ASC		235			6900
25. TERRAIN	481757.00N/1141918.00W	3132 (3100)								AS 1000	4100

COMPUTATIONS

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

8260.38A APPLIED TO MISSED APPROACH SEGMENT IAW AFS-MEMORANDUM DATED APR 25, 2006, "CORRECTION TO RNP SAAAR CLARIFICATION MEMO #4

PRIMARY

FROM			TO		
CAUGH			DOTRE		
RNP	**DISTANCE**	**PAT**	**MAP**	**HATh**	**HMAS**
1.00	4.03				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
						ASC					
26. TERRAIN	481055.71N/1142302.57W	3880 (3900)								AS 1000	4900

COMPUTATIONS

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE
CAUGH – DOTRE	9449	265	315.07	6472.2	84.72	6.70	19.96					(ZEXAX)/6.70NM

SEGMENT REMARKS

CCW DISTANCE BETWEEN CAUGH AND DOTRE 4.03, ZEXAX 4810.705N/11411.458W

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
GLACIER PARK INTL	KGPI	RNAV (RNP) RWY 20	ORIG	KALISPELL	MT	2977	RNAV

PRIMARY

FROM	TO
DOTRE	DEBRE

RNP	DISTANCE	PAT	MAP	HATh	HMAS
1.00	4.23				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
27. 200' AAO	480532.35N/1142154.27W	5679	50	20	2C	ASC				AC20	5700
28. TERRAIN	480532.35N/1142154.27W	5479 (5500)								AS 1500	7000

COMPUTATIONS

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE
DOTRE – DEBRE	10000	265	318.00	7023.2	90.23	6.70	19.94					(ZEXAX)/6.70NM

SEGMENT REMARKS
CCW DISTANCE BETWEEN CAUGH AND DOTRE 4.23, EJXAH 4810.705N/11411.458W

PRIMARY

FROM	TO
DEBRE	ANGIL

RNP	DISTANCE	PAT	MAP	HATh	HMAS
1.00	11.02				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
						ASC				MEA	10000
29. 200' AAO	480304.07N/1141906.22W	5919	50	20	2C	1000				AC20	7000
30. TERRAIN	480304.07N/1141906.22W	5719 (5700)								AS 1500	7200
31. 200' AAO	481632.83N/1140517.82W	7407	1000	3	6A	2000				AC3 PR260	9700

COMPUTATIONS

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS
OBSTACLE 29 IS MAP LVL OCS, OBSTACLE 31 IS LVL OCS HOLDING

CIRCLING NA

MSA

CENTER	RADIUS
RW20	25 NM

SECTOR	OBSTRUCTION	COORDINATES	BEARING	DISTANCE	ELEV MSL	HORZ	VERT	AC	ROC	ADJUSTMENTS	MIN ALT
360-360	200' AAO (GF-S-0776)	483047.90N/1133640.80W	065	27.9	10342	1000	3	6A	1000		11400

MSA REMARKS

NOTES/EXPLANATIONS FROM PROCEDURE SEGMENTS

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
GLACIER PARK INTL	KGPI	RNAV (RNP) RWY 20	ORIG	KALISPELL	MT	2977	RNAV

PART B SUPPLEMENTAL DATA

COMMUNICATIONS WITH
GPI TOWER, ZLC

WX SERVICE	LOCATION	HRS OF OPERATION	ALTIMETER SOURCE	DISTANCE	SERVICE A	ADJUSTMENTS
ASOS/ATIS	KGPI	24	KGPI	0	Y	
BACK-UP WX SERVICE	**LOCATION**	**HRS OF OPERATION**	**BACK-UP ALTIMETER SOURCE**	**DISTANCE**	**SERVICE A**	**ADJUSTMENTS**

WX REMARKS
ATIS WHEN TOWER IS OPEN, BACK-UP ALTIMETER SETTING NOT AVAILABLE WITHIN 5 MILES

PRIMARY NAVAID	MONITOR POINT	HRS OF OPERATION/CAT
SECONDARY NAVAID	**MONITOR POINT**	**HRS OF OPERATION/CAT**

APPROACH AND RUNWAY LIGHTS	RUNWAY MARKINGS	RUNWAY VISUAL RANGE
RWY 02 MALSR, HIRL, PAPI-4L	PIR-G	
RWY 12 MIRL	NPI-G	
RWY 20 HIRL, REIL, PAPI-4L	PIR-G	
RWY 27 MIRL, PAPI-4L	BSC-G	

GLIDESLOPE ANGLE	ELEV RWY THRESHOLD	TCH	ELEV GS ANTENNA	DISTANCE FROM RWY	VGSI
3.00	2976.3	45.0			3.00/45

FINAL APPROACH COURSE AIMING		FT FROM THRESHOLD	FT FROM CENTERLINE	DISPLACED THRESHOLD DISTANCE
RUNWAY THRESHOLD	X			
ON CENTERLINE	X			

CRITICAL TEMPARTURES

CRITICAL LOW	CRITICAL HIGH	ACT	APT ISA
-21C (-5F)	+43C (109F)	-23.72C	+9.05C

CRITICAL TEMPARTURES REMARKS
DESCENT RATE STANDARD TEMP 974 HIGH TEMP 1126; ORIGINAL DELTA ISA LOW -32.77C RAISED TO SUPPORT GPA DESIGN

8260.3 VOLUME 1, "VISUAL PORTION OF FINAL" PENETRATIONS

RNP
20:1
34:1
3068 TREE (KGPI013) (50/20) 481938.72N/1141409.51W (2.37) 2992 ROD ON BLDG (KGPI004) (10/3) 481916.01N/1141436.23W (1.37)
REMARKS
FPO NOTIFIED

HELICOPTER 'VISUAL PORTION OF FINAL" PENETRATIONS

and/or

5280-FT "PROCEED VFR" SEGMENT LEVEL SURFACE AREA PENTRATIONS GLIDESLOPE ANGLE

REMARKS

PART C: GENERAL REMARKS
PRECIPITOUS TERRAIN EVALUATION COMPETED, DEVELOPED IAW FAAO 8160.52, SEE ATCH'D VEB SPREADSHEET

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
GLACIER PARK INTL	KGPI	RNAV (RNP) RWY 20	ORIG	KALISPELL	MT	2977	RNAV

PART D: AIRSPACE

ALL DISTANCES TO 1/100NM; ELEVATION TO NEAREST FOOT; COORDINATES TO 1/100 SECOND; DEG TO 1/100 DEGREE

DISTANCE FROM	THLD	**TO 1000FT POINT**	5.00
WIDTH OF	FINAL	**SEGMENT AT 1000FT POINT**	1.20
TRUE COURSE OF	ARC FINAL	**SEGMENT CONTAINING 1000FT POINT**	RF
HIGH TERRAIN IN	FINAL	**SEGMENT CONTAINING 1000FT POINT**	3600
DISTANCE FROM	THLD	**TO 1500FT POINT**	7.00
WIDTH OF	FINAL	**SEGMENT AT 1500FT POINT**	1.20
TRUE COURSE OF	ARC FINAL	**SEGMENT CONTAINING 1500FT POINT**	RF
HIGH TERRAIN IN	FINAL	**SEGMENT CONTAINING 1500FT POINT**	3600

THRESHOLD COORDINATES (IF STR-IN) 481908.62N/1141447.46W

ARP COORDINATES 481837.07N/1141521.60W

RUNWAY APCH END AND DIST FURTHEST FROM ARP RWY20/0.84 NM

FAF/PFAF COORDINATES 482551.55N/1141351.32W

FIX NAME COORDINATES

AIRSPACE REMARKS
FINAL SEGEMNT CONTAINS A STRAIGHT SEGMENT AND RF SEGMENTS (SEE ATCH'D DRAWINGS)

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
GLACIER PARK INTL	KGPI	RNAV (RNP) RWY 20	ORIG	KALISPELL	MT	2977	RNAV

PART E: PREPARED BY

NAME	TITLE	DATE	OFFICE
WHIP M SUNN	AERONAUTICAL INFORMATION SPECIALIST	1/1/2011	AJV-375

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Figure J-4.

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
KEYSTONE AIRPARK	K42J	VOR/DME RWY 5	AMDT 1	KEYSTONE HEIGHTS	FL	196	GNV VORTAC

PART A: OBSTRUCTION DATA SEGMENTS

INTERMEDIATE

FROM: GNV VORTAC (IF/IAF)

TO: TAYLA/9.45 DME

RNP	DISTANCE	PAT	MAP		HATh				HMAS		
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
1. TOWER (12-002073)	294613.00N/0821204.00W	604	500	50	5D	500				AT696	1800
2. TERRAIN	294442.74N/0821820.36W	184 (200)								AS1500	1700

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

FINAL

FROM: TAYLA/9.45 DME

TO: TURLE/13.42 DME FIX

RNP	DISTANCE	PAT	MAP		HATh				HMAS		
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
3. TOWER (12-004611)	294810.00N/0820328.00W	421	20	3	1A	250					680

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

STRAIGHT-IN PROCEDURE DEVELOPED TO MAP 1NM ON COURSE FROM RWY END TO AVOID R-2903

HOLD-IN-LIEU-OF-PT

FROM: GNV VORTAC

TO: TAYLA/9.45 DME

RNP	DISTANCE	PAT P-4	MAP		HATh				HMAS		
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
4. TOWER (12-000747)	293754.76N/0822508.40W	580	20	3	1A	1000				AT1420	3000
5. TERRAIN	294300.00N/0822021.00W	243 (200)								AS1500	1700

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

PRIMARY

FROM: TURLE/13.42 DME FIX

TO: GNV VORTAC

RNP	DISTANCE TURLE/13.42 DME FIX	PAT	MAP		HATh				HMAS 430		
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
1. TOWER (12-002073)	294613.00N/0821204.00W	604	500	50	5D	1000					1800
6. TERRAIN	295327.00N/0820324.00W	266 (300)								AS1500	1800

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

MISS TURN MUST REMAIN OUTSIDE RESTRICTED AREA NORTHEAST OF AIRFIELD

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
KEYSTONE AIRPARK	K42J	VOR/DME RWY 5	AMDT 1	KEYSTONE HEIGHTS	FL	196	GNV VORTAC

CIRCLING

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
7. TREE	295054.39N/0820213.05W	1.32	484	209	50	20	2C	300		SI	680

CATEGORY B

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
7. TREE	295054.39N/0820213.05W	1.80	484	209	50	20	2C	300		SI	680

CATEGORY C

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
7. TREE	295054.39N/0820213.05W	1.80	484	209	50	20	2C	300		SI	680

CIRCLING REMARKS

CIRCLING RESTRICTION ON CATS B AND C AIRCRAFT DUE TO RESTRICED AREAS. ALTHOUGHT CIRLCING TRAPS ARE CLEAR OF RESTRICTED AREAS, CONCERN OF FLIGHT INTO RESTRICED AREA DICTATED THE NOTE. CIRLCING/NIGHT RESTRICTION NOT APPLIED PER FPO

MSA

CENTER	RADIUS
GNV VORTAC	25 NM

SECTOR	OBSTRUCTION	COORDINATES	BEARING	DISTANCE	ELEV MSL	HORZ	VERT	AC	ROC	ADJUSTMENTS	MIN ALT
360-360	TOWER (12-002347)	291607.00N/0820450.00W	162	27.3	1449	500	50	5D	1000		2500

MSA REMARKS

NOTES/EXPLANATIONS FORM PROCEDURE SEGMENTS

VEGETATION – 100' PLUS TERRAIN PER FPO
FPO PROVIDE COPY OF VISI99 AND A COPY WAS CHECKED INTO PTS

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
KEYSTONE AIRPARK	K42J	VOR/DME RWY 5	AMDT 1	KEYSTONE HEIGHTS	FL	196	GNV VORTAC

PART B SUPPLEMENTAL DATA

COMMUNICATIONS WITH
ZLC ARTCC, GNV FSS, JAX APPCON

WX SERVICE	LOCATION	HRS OF OPERATION	ALTIMETER SOURCE	DISTANCE	SERVICE A	ADJUSTMENTS
AWOS-3	ON AIRPORT	24	K42J	0	N	0
BACK-UP WX SERVICE	**LOCATION**	**HRS OF OPERATION**	**BACK-UP ALTIMETER SOURCE**	**DISTANCE**	**SERVICE A**	**ADJUSTMENTS**
ASOS	KGNV	24	KGVN	14.93	Y	40.50

WX REMARKS
RASS (PRESSURE PATTERNS THE SAME), K42J: 196.0 MSL; KGVN: 151.4 MSL

PRIMARY NAVAID	MONITOR POINT	HRS OF OPERATION/CAT
GNV VORTAC	GNV FSS	24/1

APPROACH AND RUNWAY LIGHTS	RUNWAY MARKINGS	RUNWAY VISUAL RANGE
RWY 5: MIRL (PCL), PAPI-2L	NPI-G	
RWY 11: HIRL (PCL), PAPI-2L	BSC-F	
RWY 23: MIRL (PCL), PAPI-2L	NPI-F	
RWY 29: HIRL (PCL), PAPI-2L	BSC-F	

GLIDESLOPE ANGLE	ELEV RWY THRESHOLD	TCH	ELEV GS ANTENNA	DISTANCE FROM RWY	VGSI
3.00	176.5	40.0			3.00/40.0

FINAL APPROACH COURSE AIMING		FT FROM THRESHOLD	FT FROM CENTERLINE	DISPLACED THRESHOLD DISTANCE
RUNWAY THRESHOLD	X			
ON CENTERLINE				

CRITICAL TEMPARTURES

CRITICAL LOW	CRITICAL HIGH	ACT	APT ISA

CRITICAL TEMPARTURES REMARKS

8260.3 VOLUME 1, "VISUAL PORTION OF FINAL" PENETRATIONS

VOR/DME
20:1
R05
214 TREE (K42JT001) 295005.61N/0820317.57W (19.43)   211 TREE (K42JT020) 295003.40N/0820310.54W (5.37)
211 TREE (K42JT017) 295009.29N/0820317.52W (4.50)   220 TREE (K42JT008) 295008.07N/0820319.71W (2.49)
215 TREE (K42JT009) 295007.96N/0820318.16W (1.92)   191 TREE (K42JT018) 295005.94N/0820308.421W (1.04)

R11
289 TREE 295100.40N/0820328.78W (83.79)   289 TREE 295101.88N/0820332.48W (66.12)

R23
309 TREE 295054.39N/0820213.05W (53.46)

R29
299 TREE 295043.12N/0820214.39W (48.92)

34:1

REMARKS
34:1 PENETRATIONS TO NUMEROUS TO LIST, VISI 99 PROVIDED TO FPO. CIRLCING/NIGHT RESTRICTGION NOT APPLIED PER FPO.

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
KEYSTONE AIRPARK	K42J	VOR/DME RWY 5	AMDT 1	KEYSTONE HEIGHTS	FL	196	GNV VORTAC

HELICOPTER 'VISUAL PORTION OF FINAL" PENETRATIONS

and/or

5280-FT "PROCEED VFR" SEGMENT LEVEL SURFACE AREA PENTRATIONS GLIDESLOPE ANGLE

REMARKS

PART C: GENERAL REMARKS

VDP NOT ESTABLISHED – OBSTACLES PENETRATE VDP SURFACE AND VDP IS LESS THAN 0.5 NM BEFORE MAP; PARA 251, 20:1 AND 34:1 PENETRATIONS; PRECIPOITOUS TERRAIN EVALUATION COMPLETED.

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
KEYSTONE AIRPARK	K42J	VOR/DME RWY 5	AMDT 1	KEYSTONE HEIGHTS	FL	196	GNV VORTAC

PART D: AIRSPACE

DOCKET #

ALL DISTANCES TO 1/100NM; ELEVATION TO NEAREST FOOT; COORDINATES TO 1/100 SECOND; DEG TO 1/100 DEGREE

DISTANCE FROM	THLD	TO 1000FT POINT	2.75
WIDTH OF	FINAL	SEGMENT AT 1000FT POINT	0.32
TRUE COURSE OF	FINAL	SEGMENT CONTAINING 1000FT POINT	292.83
HIGH TERRAIN IN	FINAL	SEGMENT CONTAINING 1000FT POINT	33
DISTANCE FROM	THLD	TO 1500FT POINT	4.42
WIDTH OF	FINAL	SEGMENT AT 1500FT POINT	0.32
TRUE COURSE OF	FINAL	SEGMENT CONTAINING 1500FT POINT	292.83
HIGH TERRAIN IN	FINAL	SEGMENT CONTAINING 1500FT POINT	33
THRESHOLD COORDINATES (IF STR-IN)	264055.13N/0800448.89W		
ARP COORDINATES	264057.29N/0800542.22W		
RUNWAY APCH END AND DIST FURTHEST FROM ARP	RWY14/0.8NM		
FAF/PFAF COORDINATES	264057.29N/0800542.22W		
FIX NAME COORDINATES			

REMARKS
APPROACH DRAWING ATTACHED. DISPLACED THRESHOLD

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
KEYSTONE AIRPARK	K42J	VOR/DME RWY 5	AMDT 1	KEYSTONE HEIGHTS	FL	196	GNV VORTAC

PART E: PREPARED BY

NAME	TITLE	DATE	OFFICE
M. E. STICK	AERONAUTICAL INFORMATION SPECIALIST	11/31/2009	AJV-3531

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Figure J-5.

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
REID-HILLVIEW OF SANTA CLARA	KRHV	RNAV (GPS) Y RWY 31R	ORIG	SAN JOSE	CA	135	RNAV

PART A: OBSTRUCTION DATA SEGMENTS

FEEDER

FROM	TO
CATHE	ZUXOX

RNP	DISTANCE	PAT	MAP	HATh	HMAS
	8.54				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
1. AAO	370721.60N/1212705.80W	2876	1000	3	6A	2000					4900
2. TERRAIN	370721.60N/1212705.80W	2676 (2700)								AS1500	4200

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

INITIAL

FROM	TO
ZUXOX	ECYON

RNP	DISTANCE	PAT	MAP	HATh	HMAS
	8.00				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
3. AAO	370703.20N/1213047.10W	3000	1000	3	6A	1000				PR172	4200
4. TERRAIN	370703.20N/1213047.10W	2800 (2800)								AS1500	4300

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

INITIAL

FROM	TO
GILRO	ECYON

RNP	DISTANCE	PAT	MAP	HATh	HMAS
	7.72				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
5. AAO	370551.00N/1213048.00W	2494	250	125	4E	1000				PR127 AT679	4300
6. TERRAIN	370551.00N/12173048.00W	2294 (2300)								AS1500	3800

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

INTERMEDIATE

FROM	TO
EYCON	UBIPE

RNP	DISTANCE	PAT	MAP	HATh	HMAS
	7.72				

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
7. AAO	371406.00N/1214242.00W	1592	250	125	4E	500				AC98 DG610	2800
8. TERRAIN	371406.00N/1214242.00W	1392 (1400)								AS1500	2400

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
REID-HILLVIEW OF SANTA CLARA	KRHV	RNAV (GPS) Y RWY 31R	ORIG	SAN JOSE	CA	135	RNAV

INTERMEDIATE

FROM			TO								
EYCON			UBIPE								
RNP	**DISTANCE**	**PAT**	**MAP**		**HATh**				**HMAS**		
	7.72										
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
7. AAO	371406.00N/1214242.00W	1592	250	125	4E	500				AC98 DG610	2800
8. TERRAIN	371406.00N/1214242.00W	1392 (1400)								AS1500	2400

COMPUTATIONS

TF TURN FIX ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

FINAL: LNAV

FROM			TO								
UBIPE			SIKEW/4.20 NM TO RW31R								
RNP	**DISTANCE**	**PAT**	**MAP**		**HATh**				**HMAS**		
	2.70 NM										
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
9. AAO	371517.66N/1214344.70W	1471	50	3	2A	250				SA-50 XL45 DG21 RA23	1760

COMPUTATIONS

TF TURN FIX ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

COURSE OFFSET 5 DEGREES TO AVOID HIGH TERRAIN EAST OF FINAL APPROACH COURSE

FINAL: LNAV STEPDOWN

FROM			TO								
SIKEW/4.20 NM TO RW31R			RW31R								
RNP	**DISTANCE**	**PAT**	**MAP**		**HATh**				**HMAS**		
	4.20 NM		RW31R						1090		
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
10. AAO	371642.90N/1214706.32W	1079	250	20	2C	250					1340
										RA23	1360

COMPUTATIONS

TF TURN FIX ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
REID-HILLVIEW OF SANTA CLARA	KRHV	RNAV (GPS) Y RWY 31R	ORIG	SAN JOSE	CA	135	RNAV

MISSED APPROACH

PRIMARY: LNAV

FROM	DISTANCE	PAT	TO	HATh	HMAS
RW31R			TEBIJ		
RNP			MAP 1090		

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
						ASC					4000
11. AAO	372912.00N/1215218.00W	2479	250	125	4E	1000				SA-999	2500
12. TERRAIN	372542.00N/1215100.00W	890 (900)								AS1500	2400

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

FROM	DISTANCE	PAT	TO	HATh	HMAS
TEBIJ			DECOT		
RNP			MAP		

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
						ASC					4000
11. AAO	372912.00N/1215218.00W	2479	250	125	4E	1000				SA-999	2500
12. TERRAIN	372542.00N/1215100.00W	890 (900)								AS1500	2400

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

CIRCLING

CATEGORY A

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
13. TOWER (06-002659)	371840.50N/1214904.90W	1.33	1205/1225	377	250	50	4D	300		SI/SI	1340/1360

CATEGORY B

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
13. TOWER (06-002659)	371840.50N/1214904.90W	1.95	1205/1225	377	250	50	4D	300		SI/SI	1340/1360

CIRCLING REMARKS

OBST 13 ASSIGNED 4D AC BASED ON ASN 2005-AWP-476-OE

MSA

CENTER	RADIUS
RW31R	25 NM

SECTOR	OBSTRUCTION	COORDINATES	BEARING	DISTANCE	ELEV MSL	HORZ	VERT	AC	ROC	ADJUSTMENTS	MIN ALT
360-360	AAO	371940.50N/1214704.90W	065	9.4	4600	1000	3	6A	1000		5600

MSA REMARKS

NOTES/EXPLANATIONS FROM PROCEDURE SEGMENTS

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
REID-HILLVIEW OF SANTA CLARA	KRHV	RNAV (GPS) Y RWY 31R	ORIG	SAN JOSE	CA	135	RNAV

PART B SUPPLEMENTAL DATA

COMMUNICATIONS WITH
RHV TOWER, NCT TRACON, ZOA ARTCC

WX SERVICE	LOCATION	HRS OF OPERATION	ALTIMETER SOURCE	DISTANCE	SERVICE A	ADJUSTMENTS
LAWR	KRHV	TWR OPEN	KRHV	0	N	
BACK-UP WX SERVICE	**LOCATION**	**HRS OF OPERATION**	**BACK-UP ALTIMETER SOURCE**	**DISTANCE**	**SERVICE A**	**ADJUSTMENTS**
ASOS	KSJC	24	KSJC	5.53	Y	22.9

WX REMARKS
RASS PRESSURE PATTTERNS THE SAME, KRHV 135, KSJC 62

PRIMARY NAVAID	MONITOR POINT	HRS OF OPERATION/CAT
SECONDARY NAVAID	**MONITOR POINT**	**HRS OF OPERATION/CAT**

APPROACH AND RUNWAY LIGHTS	RUNWAY MARKINGS	RUNWAY VISUAL RANGE
RWY 13L MIRL (PCL), VASI-2L	BSG-G	
RWY 13R	BSC-G	
RWY 31L VASI-2L	BSC-G	
RWY 31R MIRL (PCL), REIL (PCL), VASI-2L	BSG-G	

GLIDESLOPE ANGLE	ELEV RWY THRESHOLD	TCH	ELEV GS ANTENNA	DISTANCE FROM RWY	VGSI
					4.00/42

FINAL APPROACH COURSE AIMING		FT FROM THRESHOLD	FT FROM CENTERLINE	DISPLACED THRESHOLD DISTANCE
RUNWAY THRESHOLD	X			410
ON CENTERLINE	X			

CRITICAL TEMPARTURES

CRITICAL LOW	CRITICAL HIGH	ACT	APT ISA

CRITICAL TEMPERATURES REMARKS

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
REID-HILLVIEW OF SANTA CLARA	KRHV	RNAV (GPS) Y RWY 31R	ORIG	SAN JOSE	CA	135	RNAV

8260.3 VOLUME 1, "VISUAL PORTION OF FINAL" PENETRATIONS

LNAV
20:1
RWY31L
217 TREE (KRHVL057) 371931.93N/1214854.01W (4.61)

RWY31R

200 TREE (KRHVL043) 371944.94N/1214851.71W (32.09)	202 TREE (KRHV0037) 371943.67N/1214851.71W (26.88)
173 TREE (KRHV0038) 371943.01N/1214854.00W (2.85)	174 TREE (KRHV0036) 371943.31N/1214852.37W (1.09)

34:1
RWY 31L

246 TREE (KRHV0047) 371928.77N/1214843.16W (41.72)	240 TREE (KRHVL053) 371933.22N/1214837.25W (37.81)
225 TREE (KRHVL058) 371935.51N/1214843.56W (37.28)	240 TREE (KRHVL065) 371927.28N/1214842.32W (30.98)
193 TREE (KRHV0042) 371937.29N/1214850.66W (19.67)	235 TREE (KRHVL069) 371925.21N/1214840.70W (18.75)
198 OL ON BLDG (KRHVL005) 371943.31N/1214852.17W (18.42)	173 TREE (KRHV0038) 371743.01N/1214854.00W (18.02)
229 TREE (KRHVL067) 371927.50N/1214840.34W (17.67)	174 TREE (KRHV0036) 371943.31N/1214852.37W (17.40)
195 OL ON BLDG (KRHV002) 371933.74N/1214852.17W (15.42)	218 TREE (KRHVL0064) 371931.76N/1214837.12W (12.16)
200 OL ON BLDG (KRHVL060) 371031.07N/1214849.98W	168 TREE (KRHVL050) 371939.81N/1214855.57W (7.68)
166 TREE (KRHVL047) 371940.93N/1214854.74W (7.15)	151 ROAD (KRHVL038) 371945.59N/1214856.94W (6.35)
156 ELECTRICAL SYSTEM (KRHVL042) 371943.85N/1214855.56W (5.25)	150 RD (KRHVL039) 371943.75N/1214859.53W (4.70)
165 TREE (KRHV0040) 371939.81N/1214855.56W (4.67)	163 TREE (KRHV0039) 371940.92N/1214854.73W (3.37)
196 BLDG (KRHVL061) 371929.99N/1214849.52W (3.73)	148 ROAD (KRHV0018) 371945.58N/1214856.94W (3.33)
230 TREE (KRHVL071) 371919.50N/1214842.80W (3.22)	147 OL LT (KRHVL036) 371945.13N/1214857.98W (2.75)
153 LIGHT STANDARD (KRHV0032) 371943.95N/1214855.62W (2.57)	147 ROAD (KRHV0029) 371943.74N/1214859.52W (1.66)
144 OL LIGHT STANDARD (KRHV0008) 371945.19N/1214858.11W (0.08)	

REMARKS
8260.3B, VOL 1 PARA 3.3.2c 20:1 AND 34:1 PENETRATIONS (FPT NOTIFIED); VDP NOT ESTABLISHED UNLIT 20:1 PENETRATIONS; OBSTACLE 34:1 LIST SIDESTEP TO RWY31L

HELICOPTER 'VISUAL PORTION OF FINAL" PENETRATIONS

and/or

5280-FT "PROCEED VFR" SEGMENT LEVEL SURFACE AREA PENTRATIONS GLIDESLOPE ANGLE

REMARKS:

PART C: GENERAL REMARKS
PRECIPITOUS TERRAIN EVALUATION COMPLETED; TAA NOT DEVELOPED PER ATC REQUEST; TERPS PARAGARAPH 289 APPLIED TO 1645 AAO 371456.31N/1214307.62W

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
REID-HILLVIEW OF SANTA CLARA	KRHV	RNAV (GPS) Y RWY 31R	ORIG	SAN JOSE	CA	135	RNAV

PART D: AIRSPACE

DOCKET #

ALL DISTANCES TO 1/100NM; ELEVATION TO NEAREST FOOT; COORDINATES TO 1/100 SECOND; DEG TO 1/100 DEGREE

DISTANCE FROM	THLD	TO 1000FT POINT	4.90
WIDTH OF	FINAL	SEGMENT AT 1000FT POINT	1.75
TRUE COURSE OF	FINAL	SEGMENT CONTAINING 1000FT POINT	327.94
HIGH TERRAIN IN	FINAL	SEGMENT CONTAINING 1000FT POINT	1247
DISTANCE FROM	FAF	TO 1500FT POINT	3.44
WIDTH OF	INTERMEDIATE	SEGMENT AT 1500FT POINT	3.44
TRUE COURSE OF	INTERMEDIATE	SEGMENT CONTAINING 1500FT POINT	317.46
HIGH TERRAIN IN	INTERMEDIATE	SEGMENT CONTAINING 1500FT POINT	1292

THRESHOLD COORDINATES (IF STR-IN) 371950.24N/12141901.27W

ARP COORDINATES 371959.30N/1214911.30W

RUNWAY APCH END AND DIST FURTHEST FROM ARP RWY13L/0.26 NM

FAF/PFAF COORDINATES 371958.19N.1214425.60W

FIX NAME COORDINATES

REMARKS
APPROACH/DRAWING ATTACHED, DRWT

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
REID-HILLVIEW OF SANTA CLARA	KRHV	RNAV (GPS) Y RWY 31R	ORIG	SAN JOSE	CA	135	RNAV

PART E: PREPARED BY

NAME	TITLE	DATE	OFFICE
WIE P. SCANT	AERONAUTICAL INFORMATION SPECIALIST	12/31/2010	AJV-3245

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Figure J-6.

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
SHAFTER-MINTER FIELD	KMIT	RNAV (GPS) RWY 12	AMDT 1	SHAFTER	CA	424	RNAV

PART A: OBSTRUCTION DATA SEGMENTS

INITIAL

FROM	TO
CORTEZ	JATLU

RNP	DISTANCE	PAT	MAP		HATh				HMAS		
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
1. AAO	353428.00N/1192049.11W	529	400	50	4D	1000				AT 471	2000
2. TERRAIN	353428.00N/1192049.11W	329 (300)								AS 1500	1800

COMPUTATIONS

TF TURN FIX ALT KIAS KTAS HAA VKTW TR BA DTA COURSE CHANGE DVEB VEB OCS RF CENTER FIX/DISTANCE

SEGMENT REMARKS

INITIAL

FROM	TO
PONDD	JATLU

RNP	DISTANCE	PAT	MAP		HATh				HMAS		
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
3. TOWER (06-002541)	354458.48N/1191700.75W	707	500	50	5D	1000				AT 293	2000
4. TERRAIN	354754.00N/1191136.00W	397 (400)								AS 1500	1900

COMPUTATIONS

RF SEGMENT/TF TURN FIX ALT KIAS KTAS HAA VKTW TR BA DTA COURSE CHANGE DVEB VEB OCS RF CENTER FIX/DISTANCE

SEGMENT REMARKS

INTERMEDIATE

FROM	TO
JATLU	SIGRE

RNP	DISTANCE	PAT	MAP		HATh				HMAS		
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
5. AAO	353436.00N/1191600.00W	604	250	125	4E	500				DG741 AC125	2000
6. TERRAIN	353436.00N/1191600.00W	404 (400)								AS 1500	1900

COMPUTATIONS

RF SEGMENT/TF TURN FIX ALT KIAS KTAS HAA VKTW TR BA DTA COURSE CHANGE DVEB VEB OCS RF CENTER FIX/DISTANCE

SEGMENT REMARKS

LPV, LNAV/VNAV, LNAV INTERMEDIATE OBSTACLE ARE THE SAME

FINAL: LPV

FROM	TO
SIGRE	RW12

RNP	DISTANCE	PAT	MAP		HATh				HMAS		
					250						
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT**
						ASC	34:1				663

COMPUTATIONS

RF SEGMENT/TF TURN FIX ALT KIAS KTAS HAA VKTW TR BA DTA COURSE CHANGE DVEB VEB OCS RF CENTER FIX/DISTANCE

SEGMENT REMARKS

250 HATh DUE TO NON PRECISION MARKING FOR LPV

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
SHAFTER-MINTER FIELD	KMIT	RNAV (GPS) RWY 12	AMDT 1	SHAFTER	CA	424	RNAV

FINAL: LNAV/VNAV

FROM			TO							
SIGRE			RW12							
RNP	DISTANCE	PAT	MAP		HATh				HMAS	
					250					

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
						ASC	23.4:1				663

COMPUTATIONS

RF SEGMENT/TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

FINAL: LNAV

FROM			TO			
SIGRE			CISUR/1.40 NM TO RW12			
RNP	DISTANCE	PAT	MAP	HATh		HMAS

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
7. AAO	353306.28N/1191446.52W	604	50	20	2C	250				RA31	900

COMPUTATIONS

RF SEGMENT/TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

FINAL: LNAV STEPDOWN

FROM			TO			
CISUR/1.40 NM TO RW12			RW12			
RNP	DISTANCE	PAT	MAP	HATh		HMAS

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
8. TREE (KMITL001)	353035.54N/1191220.25W	452	50	20	2C	250				RA30	740

COMPUTATIONS

RF SEGMENT/TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

MISSED APPROACH

PRIMARY

FROM			TO		
DA			MARIC		
RNP	DISTANCE	PAT	MAP	HATh	HMAS
					448

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
						ASC					3000
9. TRMSN TWR	352726.90N/1190456.00W	600	50	20	2C	1000					1700
10. TERRAIN	352742.00N/1190509.00W	542 (500)								AS1500	2000

COMPUTATIONS

RF SEGMENT/TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
SHAFTER-MINTER FIELD	KMIT	RNAV (GPS) RWY 12	AMDT 1	SHAFTER	CA	424	RNAV

PRIMARY

FROM			TO		
DA			MARIC		
RNP	**DISTANCE**	**PAT**	**MAP**	**HATh**	**HMAS**
					448

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
						ASC					3000
9. TRMSN TWR	352726.90N/1190456.00W	600	50	20	2C	1000					1700
10. TERRAIN	352742.00N/1190509.00W	542 (500)								AS1500	2000

COMPUTATIONS

RF SEGMENT/TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

PRIMARY

FROM			TO		
RWY 12			MARIC		
RNP	**DISTANCE**	**PAT**	**MAP**	**HATh**	**HMAS**
					448

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
						ASC					3000
9. TRMSN TWR	352726.90N/1190456.00W	600	50	20	2C	1000					1700
10. TERRAIN	352742.00N/1190509.00W	542 (500)								AS1500	2000

COMPUTATIONS

RF SEGMENT/TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

ALTERNATE: NA

CIRCLING

CATEGORY A

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
11. TANK (06-002035)	352957.00N/1190956.00W	1.32	475	550	250	50	4D	300		AC50	900

CATEGORY B

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
11. TANK (06-002035)	352957.00N/1190956.00W	1.62	475	550	250	50	4D	300		AC50	900

CATEGORY C

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
11. TANK (06-002035)	352957.00N/1190956.00W	1.91	475	550	250	50	4D	300		AC50	900

CIRCLING REMARKS

CIRCLING TO RWY 17, 35, 8 AND 26 N/A AT NIGHT, NO SURVEY TYPE PROVIDE AND FPO ADVISED R17/35 ARE VISUAL USE ONLY

MSA

CENTER	RADIUS
RW12	25 NM

SECTOR	OBSTRUCTION	COORDINATES	BEARING	DISTANCE	ELEV MSL	HORZ	VERT	AC	ROC	ADJUSTMENTS	MIN ALT
360-360	AAO	352958.00N/1190958.00W	083	28.6	7005	50	3	2A	1000		8100

MSA REMARKS

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
SHAFTER-MINTER FIELD	KMIT	RNAV (GPS) RWY 12	AMDT 1	SHAFTER	CA	424	RNAV

NOTES/EXPLANATION FROM PROCEDURE SEGMENTS
12' VEGETATION HEIGHT USED PER FPT

PART B SUPPLEMENTAL DATA

COMMUNICATIONS WITH
ZLA ARTCC, BFL APP CON

WX SERVICE	LOCATION	HRS OF OPERATION	ALTIMETER SOURCE	DISTANCE	SERVICE A	ADJUSTMENTS
AWOS-3	KMIT	24	KMIT	0	N	
BACK-UP WX SERVICE	**LOCATION**	**HRS OF OPERATION**	**BACK-UP ALTIMETER SOURCE**	**DISTANCE**	**SERVICE A**	**ADJUSTMENTS**
ASOS	KBFL	24	KBFL	7.93	Y	31

WX REMARKS
RASS PRESSURE PATTERNS SAME KMIT 425 MSL, KBFL 510 MSL

PRIMARY NAVAID	MONITOR POINT	HRS OF OPERATION	CAT

APPROACH AND RUNWAY LIGHTS	RUNWAY MARKINGS	RUNWAY VISUAL RANGE
RWY 12 HIRL (PCL)	NPI-G	
RWY 30 HIRL (PCL) PAPI-2L	NPI-G	
RWY 08	BSC-G	
RWY 18	BSC-G	
RWY 17	BSC-G	
RWY 35	BSC-G	

GLIDESLOPE ANGLE	ELEV RWY THRESHOLD	TCH	ELEV GS ANTENNA	DISTANCE FROM RWY	VGSI
3.00	412.8	45.0			

FINAL APPROACH COURSE AIMING		FT FROM THRESHOLD	FT FROM CENTERLINE	DISPLACED THRESHOLD DISTANCE
RUNWAY THRESHOLD	X			
ON CENTERLINE	X			

CRITICAL TEMPARTURES

CRITICAL LOW	CRITICAL HIGH	ACT	APT ISA
			-30

CRITICAL TEMPARTURES REMARKS
AVERAGE LOW TEMP DATA NOT AVBAILALBE, STANDARD -30 ISA DEVIATION APPLIED. HIGH TEMP BASE ON AFS CALCULATOR.

8260.3 VOLUME 1, "VISUAL PORTION OF FINAL" PENETRATIONS (REQUIRES SEGMENT TYPE)

20:1
34:1
PENETRATIONS REMARKS
HELICOPTER 'VISUAL PORTION OF FINAL" PENETRATIONS
and/or
5280-FT "PROCEED VFR" SEGMENT LEVEL SURFACE AREA PENTRATIONS GLIDESLOPE ANGLE
PENETRATION REMARKS

OIS VISUAL SEGMENT PENETRATIONS (RNP ONLY)

PENETRATIONS REMARKS

PART C: GENERAL REMARKS
TAA NOT DEVELOPED PER FTP; VGSI DATA: NA – NOT INSTALLED; PRECIPITOUS TERRAIN EVALUATION COMPLETED

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
SHAFTER-MINTER FIELD	KMIT	RNAV (GPS) RWY 12	AMDT 1	SHAFTER	CA	424	RNAV

PART D: AIRSPACE

DOCKET #

ALL DISTANCES TO 1/100NM; ELEVATION TO NEAREST FOOT; COORDINATES TO 1/100 SECOND; DEG TO 1/100 DEGREE

DISTANCE FROM	THLD	TO 1000FT POINT	4.46
WIDTH OF	FINAL	SEGMENT AT 1000FT POINT	1.37
TRUE COURSE OF	FINAL	SEGMENT CONTAINING 1000FT POINT	133.31
HIGH TERRAIN IN	FINAL	SEGMENT CONTAINING 1000FT POINT	447
DISTANCE FROM	THLD	TO 1500FT POINT	6.00
WIDTH OF	FINAL	SEGMENT AT 1500FT POINT	2.00
TRUE COURSE OF	FINAL	SEGMENT CONTAINING 1500FT POINT	133.31
HIGH TERRAIN IN	FINAL	SEGMENT CONTAINING 1500FT POINT	447

THRESHOLD COORDINATES (IF STR-IN) 350338.44N/1191203.68W

ARP COORDINATES 353021.40N/1191619.27W

RUNWAY APCH END AND DIST FURTHEST FROM ARP RWY12/0.54NM

FAF/PFAF COORDINATES

FIX NAME COORDINATES

AIRSPACE REMARKS:
APPROACH/DRAWING ATTACHED

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AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
SHAFTER-MINTER FIELD	KMIT	RNAV (GPS) RWY 12	AMDT 1	SHAFTER	CA	424	RNAV

PART E: PREPARED BY

NAME	TITLE	DATE	OFFICE
I. P. DRIBBLE	SPECIALIST	03/02/2013	AJV-357

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Figure J-7.

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
WAINWRIGHT	PAWI	NDB RWY 5	AMDT 1	WAINWRIGHT	AK	41	UKK

PART A: OBSTRUCTION DATA SEGMENTS

FINAL: PT

FROM	TO
10 NM	UKK NDB

RNP	DISTANCE	PAT	MAP	HATh	HMAS
			UKK NDB		130

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
1. TREE	703428.95N/1600832.37W	89	50	20	2C	350				XP41	480

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DEVB	VEB OCSS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

XP ADJUSTMENT USED IN FINAL TO MAINTAIN PREVIOUS MDA TO APPROAVED OE STUDIES

PROCEDURE TURN

FROM	TO
UKK NDB	10NM

RNP	DISTANCE	PAT	MAP	HATh	HMAS

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
2. AAO	702457.00N/1603524.00W	345	250	125	4E	1000				AT335	1700
3. TERRAIN	702457.00N/1603524.00W	145 (100)								AS1500	1600

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DEVB	VEB OCSS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

PRIMARY

FROM	TO
UKK NDB	UKK NDB

RNP	DISTANCE	PAT	MAP	HATh	HMAS
			UKK NDB		

OBSTRUCTION	COORDINATES	ELEV MSL	HORZ	VERT	AC	ROC	OCS	CG	CGTA	ADJUSTMENTS	MIN ALT
						ASC					2000
2. AAO	702457.00N/1603524.00W	345	250	125	4E	1000					1400
3. TERRAIN	702457.00N/1603524.00W	145 (100)								AS1500	1600

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DEVB	VEB OCSS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
WAINWRIGHT	PAWI	NDB RWY 5	AMDT 1	WAINWRIGHT	AK	41	UKK

CIRCLING

CATEGORY A

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
4. TREE	703752.01N/1595526.83W	1.34	459	89	50	20	2C	300		XP111	500

CATEGORY B

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
4. TREE	703752.01N/1595526.83W	1.53	459	89	50	20	2C	300		HAA	500

CATEGORY C

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
4. TREE	703752.01N/1595526.83W	1.98	459	89	50	20	2C	300		HAA	500

CATEGORY D

OBSTRUCTION	COORDINATES	RADIUS	HAA	ELEV MSL	HORZ	VERT	AC	ROC	OCS	ADJUSTMENTS	MIN ALT
4. TREE	703752.01N/1595526.83W	2.52	559	89	50	20	2C	300		HAA	600

CIRCLING REMARKS

XP ADJUSTMENT USED TO MAINTAIN PREVIOUS MDA DUE TO APPROVED STUDIES

MSA

CENTER	RADIUS
UKK NDB	25 NM

SECTOR	OBSTRUCTION	COORDINATES	BEARING	DISTANCE	ELEV MSL	HORZ	VERT	AC	ROC	ADJUSTMENTS	MIN ALT
360-360	AAO	703754.01N/1600849.44W	177	27.2	364	250	125	4E	1000		1400

MSA REMARKS

NOTES/EXPLANATION FROM PROCEDURE SEGMENTS

PART B SUPPLEMENTAL DATA

COMMUNICATIONS WITH

FAI AFSS, ZAN ARTCC

WX SERVICE	LOCATION	HRS OF OPERATION	ALTIMETER SOURCE	DISTANCE	SERVICE A	ADJUSTMENTS
ASOS	PAWI	24	PAWI	0	Y	0

BACK-UP WX SERVICE	LOCATION	HRS OF OPERATION	BACK-UP ALTIMETER SOURCE	DISTANCE	SERVICE A	ADJUSTMENTS
ASOS	PATQ	24	PATQ	52.38	Y	128.18

WX REMARKS

PRESSURE PATTERNS THE SAME: PAWI 41, PATQ: 96

PRIMARY NAVAID	MONITOR POINT	HRS OF OPERATION	CAT
UKK NDB	FAI AFSS	24	1

APPROACH AND RUNWAY LIGHTS	RUNWAY MARKINGS	RUNWAY VISUAL RANGE
RWY 05 MIRL (PCL, REIL (PCL) PAPI-4L (PCL)		
RWY 23 MIRL (PCL, REIL (PCL) PAPI-4L (PCL)		

GLIDESLOPE ANGLE	ELEV RWY THRESHOLD	TCH	ELEV GS ANTENNA	DISTANCE FROM RWY	VGSI
					3.00/31

FINAL APPROACH COURSE AIMING		FT FROM THRESHOLD	FT FROM CENTERLINE	DISPLACED THRESHOLD DISTANCE
RUNWAY THRESHOLD		2996		
ON CENTERLINE	X			

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
WAINWRIGHT	PAWI	NDB RWY 5	AMDT 1	WAINWRIGHT	AK	41	UKK

CRITICAL TEMPARTURES

CRITICAL LOW	CRITICAL HIGH	ACT	APT ISA

CRITICAL TEMPARTURES REMARKS

8260.3 VOLUME 1, "VISUAL PORTION OF FINAL" PENETRATIONS

20:1

34:1

REMARKS
AIRPORT HAS NO SURVEY. UNABLE TO DETERMINE IF 34:1 AND 20:1 ARE CLEAR DUE TO HEIGHT OF TERRAIN CONTOURS NEAR RUNWAY. 34:1 AND 20:1 ASSUMED NOT CLEAR FOR PURPOSE OF DOCSUMENTATION; PARA 251 20:1 AND 34:1 PENTRATION FPO ADVISED.

HELICOPTER 'VISUAL PORTION OF FINAL" PENETRATIONS

and/or

5280-FT "PROCSEED VFR" SEGMENT LEVEL SURFACE AREA PENTRATIONS GLIDESLOPE ANGLE

REMARKS

PART C: GENERAL REMARKS
VDP NOT ESTABLISHED-FINAL FACILITY DOES NOT HAVE DME; PRECIPITOUS TERRAIN ELVALUATION COMPLETED; DESCENT ANGLE NOT PUBLISHED DUE TO NO-FAF PROCSEDURE WITHOUT A STEPDOWN FIX VEGETATION HEIGHT 15' AS ADVISED BY FPO; SHIP HEIGHT 50' AS ADVISED BY FPO.

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
WAINWRIGHT	PAWI	NDB RWY 5	AMDT 1	WAINWRIGHT	AK	41	UKK

PART D: AIRSPACE

DOCKET #

ALL DISTANCES TO 1/100NM; ELEVATION TO NEAREST FOOT; COORDINATES TO 1/100 SECOND; DEG TO 1/100 DEGREE

DISTANCE FROM	UKK NDB	TO 1000FT POINT	7.00
WIDTH OF	FINAL	SEGMENT AT 1000FT POINT	4.95
TRUE COURSE OF	FINAL	SEGMENT CONTAINING 1000FT POINT	058.64
HIGH TERRAIN IN	FINAL	SEGMENT CONTAINING 1000FT POINT	74
DISTANCE FROM	UKK NDB	TO 1500FT POINT	7.00
WIDTH OF	FINAL	SEGMENT AT 1500FT POINT	4.95
TRUE COURSE OF	FINAL	SEGMENT CONTAINING 1500FT POINT	058.64
HIGH TERRAIN IN	FINAL	SEGMENT CONTAINING 1500FT POINT	74

THRESHOLD COORDINATES (IF STR-IN) 703808.33N/1600042.65W

ARP COORDINATES 703816.80N/1595941.10W

RUNWAY APCH END AND DIST FURTHEST FROM ARP RWY05/0.37NM

FAF/PFAF COORDINATES

FIX NAME COORDINATES

REMARKS
NO ADDITIONAL AIRSPACE REQUIRED; APPROACH/DRAWINGS ATTACHED

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	AIRPORT ELEVATION	FACILITY
WAINWRIGHT	**PAWI**	**NDB RWY 5**	**AMDT 1**	**WAINWRIGHT**	**AK**	**41**	**UKK**

PART E: PREPARED BY

NAME	TITLE	DATE	OFFICE
JOHN P. QUINN	AERONATICAL INFORMATION SPECIALIST	8/01/2009	AJV-3564

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Figure J-8.

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	SURFACE ELEVATION	FACILITY
WEST 30TH ST. AND VARIOUS HELIPORTS	KJRA	COPTER RNAV (GPS) 210	ORIG	NEW YORK	NY	430	RNAV

PART A: OBSTRUCTION DATA SEGMENTS

INITIAL

FROM: FEMDU
TO: JEDIL
RNP

OBSTRUCTION	DISTANCE COORDINATES	PAT ELEV MSL	MAP HORZ	VERT	AC	HATh ROC	OCS	HMAS CG	CGTA	ADJUSTMENTS	MIN ALT
1. AAO	410237.84N/0735100.67W	699	50	20	2C	1000					1700
2. TERRAIN	410237.84N/0735100.67W	499 (500)								AS1000	1500

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

INITIAL

FROM: WUDGO
TO: JEDIL
RNP

OBSTRUCTION	DISTANCE COORDINATES	PAT ELEV MSL	MAP HORZ	VERT	AC	HATh ROC	OCS	HMAS CG	CGTA	ADJUSTMENTS	MIN ALT
3. AAO	410015.00N/0735218.00W	686	250	125	4E	1000					1700
4. TERRAIN	410015.00N/0735218.00W	486 (500)								AS1000	1500

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

INTERMEDIATE

FROM: JEDIL
TO: ERORE
RNP

OBSTRUCTION	DISTANCE COORDINATES	PAT ELEV MSL	MAP HORZ	VERT	AC	HATh ROC	OCS	HMAS CG	CGTA	ADJUSTMENTS	MIN ALT
5. TOWER (34-000161)	405845.30N/0735218.00W	766	50	20	2C	500					1300
6. TERRAIN	405839.00N/0735442.00W	548 (500)								AS1000	1500

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

FINAL: LNAV

FROM: ERORE
TO: ZABKI/1.00 NM TO JORBA
RNP

OBSTRUCTION	DISTANCE COORDINATES	PAT ELEV MSL	MAP HORZ	VERT	AC	HATh ROC	OCS	HMAS CG	CGTA	ADJUSTMENTS	MIN ALT
7. AAO	405715.19N/0735312.84W	589	50	20	2C	250				RA16	860

COMPUTATIONS

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA	DTA	COURSE CHANGE	DVEB	VEB OCS	RF CENTER FIX/DISTANCE

SEGMENT REMARKS

FINAL COURSE ALIGNED TO POINT-IN-SPACE

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	SURFACE ELEVATION	FACILITY
WEST 30TH ST. AND VARIOUS HELIPORTS	KJRA	COPTER RNAV (GPS) 210	ORIG	NEW YORK	NY	430	RNAV

FINAL: LNAV STEPDOWN

FROM			TO									
ZABKI/1.00 NM TO JORBA			JORBA									
RNP	**DISTANCE**	**PAT**	**MAP**			**HATh**		**HMAS**				
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS**	**CG**	**CGTA**		**ADJUSTMENTS**	**MIN ALT**
8. AAO	405412.88N/0735605.80W	619	50	20	2C	250					SA-109 RA16	780

COMPUTATIONS

TF TURN FIX ALT KIAS KTAS HAA VKTW TR BA DTA COURSE CHANGE DVEB VEB OCS RF CENTER FIX/DISTANCE

SEGMENT REMARKS

OBS LOCATED 1500 FT INTO SECONDARY; FINAL COURSE ALIGNED TO POINT-IN-SPACE

MISSED APPROACH

PRIMARY

FROM			TO								
JORBA			JEDIL								
RNP	**DISTANCE**	**PAT**	**MAP**			**HATh**		**HMAS** 512			
OBSTRUCTION	**COORDINATES**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**OCS** ASC	**CG**	**CGTA**	**ADJUSTMENTS**	**MIN ALT** 2000
9. TOWER (34-000001)	405738.00N/0735521.00W	945	20	50	1D	1000					2000
10. TERRAIN	405806.00N/0735524.00W	575 (600)								AS1000	1600

COMPUTATIONS

TF TURN FIX ALT KIAS KTAS HAA VKTW TR BA DTA COURSE CHANGE DVEB VEB OCS RF CENTER FIX/DISTANCE

SEGMENT REMARKS

CIRCLING NA

MSA

CENTER	RADIUS										
JORBA	25 NM										
SECTOR	**OBSTRUCTION**	**COORDINATES**	**BEARING**	**DISTANCE**	**ELEV MSL**	**HORZ**	**VERT**	**AC**	**ROC**	**ADJUSTMENTS**	**MIN ALT**
360-360	TOWER (36-000266)		328	27.4	1807	20	3	1A	1000		2900

MSA REMARKS

NOTES/EXPLANATIONS FROM PROCEDURE SEGMENTS

PRECIPITOUS TERRAIN EVALUATION COMPLETED; NO ADDITIONAL AIRSPACE REQUIRED; CLASS E AIRSPACE CONTINUOUS; 200FT MAX SHIP HEIGHT USED PER FPT; 200FT AAO HEIGHT USED PER FPT; PINS VFR TRANSITION AREA EVALUATION REFERENCED: 8260.42B, CHAPTER 4, SECTION 7

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	SURFACE ELEVATION	FACILITY
WEST 30TH ST. AND VARIOUS HELIPORTS	KJRA	COPTER RNAV (GPS) 210	ORIG	NEW YORK	NY	430	RNAV

PART B: SUPPLEMENTAL DATA

COMMUNICATIONS WITH
NEW YORK APP CON

WX SERVICE	LOCATION	HRS OF OPERATION	ALTIMETER SOURCE	DISTANCE	SERVICE A	ADJUSTMENTS
ASOS	KTEB	24 HRS	KTEB	6.23		15.14
BACK-UP WX SERVICE	LOCATION	HRS OF OPERATION	BACK-UP ALTIMETER SOURCE	DISTANCE	SERVICE A	ADJUSTMENTS
	KLGA		KLGA	6.28		17.99

WX REMARKS
RASS PRESSURE PATTERNS THE SAME KTEB 9, KJRA 7; KLGA 20.6, KJRA 7
PRIMARY NAVAID MONITOR POINT HRS OF OPERATION/CAT

APPROACH AND RUNWAY LIGHTS RUNWAY MARKINGS RUNWAY VISUAL RANGE

GLIDESLOPE ANGLE ELEV RWY THRESHOLD TCH ELEV GS ANTENNA DISTANCE FROM RWY VGSI

FINAL APPROACH COURSE AIMING FT FROM THRESHOLD FT FROM CENTERLINE DISPLACED THRESHOLD DISTANCE
RUNWAY THRESHOLD
ON CENTERLINE

CRITICAL TEMPARTURES
CRITICAL LOW CRITICAL HIGH ACT APT ISA

CRITICAL TEMPARTURES REMARKS

8260.3 VOLUME 1, "VISUAL PORTION OF FINAL" PENETRATIONS

20:1

34:1

REMARKS

HELICOPTER 'VISUAL PORTION OF FINAL" PENETRATIONS

and/or

5280-FT "PROCEED VFR" SEGMENT LEVEL SURFACE AREA PENTRATIONS GLIDESLOPE ANGLE

REMARKS

PART C: GENERAL REMARKS
VARIOUS OTHER HELIPORTS: KJRA - WEST 30TH ST 404516.37N/0740025.50W; KLGA – LA GUARDIA 404638.10N/0735221.40W; KJRB - DOWNTOWN MANHATTAN/WALL ST 404204.37N/0740032.50W; K6N5 – EAST 34TH STREET 404433.37N/0735819.50W. PROJECT COORDINATION: SONJA FICKLESTEIN/AJV-E24 F PT, AIS TEAM COORDINATOR XXX-XXX-XXXX (PROJECT OVERSIGHT); ARIAS STARDUM/N90 NY TRACON XXX-XXX-XXXX (IFP CHECKLIST); KJRA MANAGER JAE RASTIS XXX-XXX-XXXX OWNER VINAL REATEA; WILLS ATNORY/ ALL WEATHER OPS-ASI NEXTGEN XXX-XXX-XXXX, (1/9/2012 EMAIL) REQUESTED CONCELLATION OF COPTER RNAV GPS 210 (SPECIAL) AND DEVELOPMENT OF COPTER RNAV GPS 210 (PUBLIC); MENAS MILEY/FAA AVIATION SAFETY INSPECTOR-OPERATIONS XXX-XXX-XXXX EXT XXX, (1/10/2012 EMAIL) CONFIRMED AIRPORT IS MAINTAIND BY AIR PEGASUS (JRA WEST 30TH ST HELIPORT), NO VEGETATION ISSUSES. THE AIRPORT IS MAINTAINED 24/7, MANNED BY PERSONNEL, PHOTO SENSOR ACTIVATED LIGHTS WHICH ARE ON ALL NIGHT. AIRPORT IS OPENED TO THE PUBLIC, NO PRIOR PERMISSION REQUIRED.

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	SURFACE ELEVATION	FACILITY
WEST 30TH ST. AND VARIOUS HELIPORTS	KJRA	COPTER RNAV (GPS) 210	ORIG	NEW YORK	NY	430	RNAV

PART D: AIRSPACE

DOCKET #

ALL DISTANCES TO 1/100NM; ELEVATION TO NEAREST FOOT; COORDINATES TO 1/100 SECOND; DEG TO 1/100 DEGREE

DISTANCE FROM	FAF (INBOUND)	TO 1000FT POINT	0.33 NM
WIDTH OF	FINAL	SEGMENT AT 1000FT POINT	1.08 NM
TRUE COURSE OF	FINAL	SEGMENT CONTAINING 1000FT POINT	197.12
HIGH TERRAIN IN	FINAL	SEGMENT CONTAINING 1000FT POINT	390 (400)
DISTANCE FROM	N/A	TO 1500FT POINT	N/A
WIDTH OF	N/A	SEGMENT AT 1500FT POINT	N/A
TRUE COURSE OF	N/A	SEGMENT CONTAINING 1500FT POINT	N/A
HIGH TERRAIN IN	N/A	SEGMENT CONTAINING 1500FT POINT	N/A

THRESHOLD COORDINATES (IF STR-IN) N/A

HRP COORDINATES 404516.37N/0740025.50W

RUNWAY APCH END AND DIST FURTHEST FROM ARP N/A

FAF/PFAF COORDINATES 405717.36N/0735357.24W

FIX NAME COORDINATES

REMARKS

PROCEUDRE WITHIN CLASS-E AIRSPACE; INITIATED BELOW 1500' ABOVE HIGH TERRAIN

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STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

AIRPORT	AIRPORT ID	PROCEDURE NAME	AMENDMENT NO.	CITY	STATE	SURFACE ELEVATION	FACILITY
WEST 30TH ST. AND VARIOUS HELIPORTS	KJRA	COPTER RNAV (GPS) 210	ORIG	NEW YORK	NY	430	RNAV

PART E: PREPARED BY

NAME	TITLE	DATE	OFFICE
Kaiter J. Nikeio (Basie Gother)	Aeronautical Information Specialist	02/22/2012	AJV-352

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Appendix K. Standard Instrument Approach Procedure Continuation Sheet, FAA Form 8260-10

This appendix contains examples of Form 8260-10, Standard Instrument Approach Procedure Continuation Sheet, (see figures K-1 through K-6).

Figure K-1.

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION
RNAV
INSTRUMENT APPROACH PROCEDURE
FLIGHT STANDARDS SERVICES

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

FAS DATA BLOCK INFORMATION

DATA FIELD	DATA
OPERATION TYPE	0
SBAS SERVICE PROVIDER IDENTIFIER	0
AIRPORT IDENTIFIER	KTXK
RUNWAY	RW13
APPROACH PERFORMANCE DESIGNATOR	0
ROUTE INDICATOR	
REFERENCE PATH DATA SELECTOR	0
REFERENCE PATH IDENTIFIER (APPROACH ID)	W13A
LTP/FTP LATITUDE (NAD83)	332731.8700N
LTP/FTP LONGITUDE (NAD83)	0935931.8200W
LTP/FTP ELLIPSOIDAL HEIGHT (NAD83)	+00834
FPAP LATITUDE	332628.7500N
FPAP LONGITUDE	0935816.5200W
THRESHOLD CROSSING HEIGHT (TCH)	00054.0
TCH UNITS SELECTOR (METERS OR FEET USED)	F
GLIDEPATH ANGLE (GPA)	03.00
COURSE WIDTH AT THRESHOLD	0
LENGTH OFFSET	1360
HORIZONTAL ALERT LIMIT (HAL)	40.0
VERTICAL ALERT LIMIT (VAL)	50.0
CRC REMAINDER	1E25CEDC

ADDITIONAL PATH POINT RECORD INFORMATION

ICAO CODE	K4
LTP ORTHOMETRIC HEIGHT	+01103
FPAP ORTHOMETRIC HEIGHT	+01103

CITY AND STATE	ELEVATION: 390 TDZE: 387 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP: AMDT: NONE DATED:
TEXARKANA, AR	TEXARKANA REGIONAL/WEBB FIELD	RNAV	RNAV (GPS) RWY 14, ORIG	

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ALL AFFECTED PROCEDURES REVIEWED? ☐ YES ☐ NO		COORDINATES OF FACILITIES	REQUIRED EFFECTIVE DATE
COORDINATED WITH: ATA ☐ AAT ☐ ALPA ☐ APA ☐ AOPA ☐ NBAA ☐ OTHER (specify) ☐			
FLIGHT CHECKED BY			
NAME:	FIFO	DATE:	
DEVELOPED BY			
NAME:	NFPG	DATE:	
APPROVED BY			
NAME:	NFPG	DATE:	
CHANGES:			
REASONS:			

Figure K-2.

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION
RNAV
INSTRUMENT APPROACH PROCEDURE
FLIGHT STANDARDS SERVICES   TITLE 14 CFR PART 97.33

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

ARINC PACKET - 424-17

```
                 1         2         3         4         5         6         7         8         9         0         1         2         3
NAVAID  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAD        TXK  K4011630VTHA N33304997W094042367   N33304997W094042367E0070002702     NAWTEXARKANA
```

```
                 1         2         3         4         5         6         7         8         9         0         1         2         3
WP      123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAEAENRT   CUGSO K40    W   L N33384312W094051267                     E0029     NAW         CUGSO
        SUSAEAENRT   GIGVE K40    W   L N33310522W094141772                     E0030     NAW         GIGVE
        SUSAEAENRT   JELGA K40    W   L N33352961W094090329                     E0029     NAW         JELGA
        SUSAEAENRT   TIYGO K40    W   L N33310016W094034066                     E0028     NAW         TIYGO
        SUSAEAENRT   WATLE K40        L N33191717W093494290                     E0027     NAW         WATLE
```

```
                 1         2         3         4         5         6         7         8         9         0         1         2         3
AIRPORT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KTXKK4ATXK     0     052YHN33271340W093592770E005000390         1800018000C    MNAW    TEXARKANA REGIONAL-WEBB FIELD
```

```
                 1         2         3         4         5         6         7         8         9         0         1         2         3
SEGMENT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KTXKK4FR13   ACUGSO 010CUGSOK4EA0E  A    IF                                        18000                A JS
        SUSAP KTXKK4FR13   ACUGSO 020JELGAK4EA0EE    010TF              21990046   + 02000                            A JS
        SUSAP KTXKK4FR13   AGIGVE 010GIGVEK4EA0E  A    IF                                        18000                A JS
        SUSAP KTXKK4FR13   AGIGVE 020JELGAK4EA0EE    010TF              03990062   + 02000                            A JS
        SUSAP KTXKK4FR13   ATXK   010TXK  K4D 0V       IF                                        18000                A JS
        SUSAP KTXKK4FR13   ATXK   020JELGAK4EA0E     020TF              31510061   + 02000                            A JS
        SUSAP KTXKK4FR13   ATXK   030JELGAK4EA0EE CR   HF               12990050   + 02000                            A JS
        SUSAP KTXKK4FR13   R      010JELGAK4EA0E  I    IF                            02000       18000                A JS
        SUSAP KTXKK4FR13   R      020TIYGOK4EA0E  F 051TF               12990063   + 02000                  RW13  K4PGA JS
        SUSAP KTXKK4FR13   R      030RW13 K4PG0GY M 031TF               13000049     00416               -300         A JS
        SUSAP KTXKK4FR13   R      040WATLEK4EA0EY      DF                          + 02000                            A JS
        SUSAP KTXKK4FR13   R      050WATLEK4EA0EEMHR020HM               31010040   + 02000                            A JS
```

```
                 1         2         3         4         5         6         7         8         9         0         1         2         3
RUNWAY  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KTXKK4GRW13    0045591300 N33273187W093593182+0500          00362064154100
```

CITY AND STATE	ELEVATION: 390 TDZE: 387 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
TEXARKANA, AR	TEXARKANA REGIONAL-WEBB FIELD	RNAV	RNAV (GPS) RWY 14, ORIG	AMDT: NONE DATED:

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ALL AFFECTED PROCEDURES REVIEWED? ☐ YES ☐ NO	COORDINATES OF FACILITIES	REQUIRED EFFECTIVE DATE
COORDINATED WITH: ATA ☐ AAT ☐ ALPA ☐ APA ☐ AOPA ☐ NBAA ☐ OTHER (specify) ☐		

FLIGHT CHECKED BY		
NAME:	FIFO	DATE:

DEVELOPED BY		
NAME:	NFPG	DATE:

APPROVED BY		
NAME:	NFPG	DATE:

CHANGES:

REASONS:

Figure K-3.

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION
RNAV
INSTRUMENT APPROACH PROCEDURE
FLIGHT STANDARDS SERVICES   TITLE 14 CFR PART 97.33

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

```
                 1         2         3         4         5         6         7         8         9         0         1         2         3
PP      12345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901
        ---------------------------------------------------------------------------------------------------------------------------------
        SUSAP KTXKK4PR13   RW13 001 0000W13A0N3327318700W09359318200+008340300N3326287500W09358165200106751360000540F4005001E25CEDC
        SUSAP KTXKK4PR13   RW13 002         +01103+01103W13A      87099          000

                 1         2         3         4         5         6         7         8         9         0         1         2         3
MSA     12345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901
        ---------------------------------------------------------------------------------------------------------------------------------
        SUSAP KTXKK4SRW13 K4PG                0 25180020                  M
```

CITY AND STATE	ELEVATION: 390 TDZE: 387 / AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP: / AMDT: NONE / DATED:
TEXARKANA, AR	TEXARKANA REGIONAL-WEBB FIELD	RNAV	RNAV (GPS) RWY 14, ORIG	

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ALL AFFECTED PROCEDURES REVIEWED? ☐ YES ☐ NO	COORDINATES OF FACILITIES	REQUIRED EFFECTIVE DATE
COORDINATED WITH: ATA ☐ AAT ☐ ALPA ☐ APA ☐ AOPA ☐ NBAA ☐ OTHER (specify) ☐		
FLIGHT CHECKED BY		
NAME:	FIFO	DATE:
DEVELOPED BY		
NAME:	NFPG	DATE:
APPROVED BY		
NAME:	NFPG	DATE:
CHANGES:		
REASONS:		

Figure K-4.

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION
RNAV
INSTRUMENT APPROACH PROCEDURE
FLIGHT STANDARDS SERVICES TITLE 14 CFR PART 97.33

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

ARINC FLIGHT INSPECTION SUMMARY - VERSION 424-17

ROUTES	TRANSITION	FIX	SEQ	USE	PATH	TURN	FO/FB	RNP	MAG(TRUE)	DISTANCE	ALTITUDE
	CUGSO	CUGSO	010	IAF	IF		FB				
	CUGSO	JELGA	020		TF		FB	1.0	219.9(225T)	004.6	02000
	GIGVE	GIGVE	010	IAF	IF		FB				
	GIGVE	JELGA	020		TF		FB	1.0	039.9(045T)	006.2	02000
	TXK	TXK	010		IF		FB				
	TXK	JELGA	020		TF		FB	2.0	315.1(320T)	006.1	02000
	TXK	JELGA	030		HF	R	FB		129.9(135T)	005.0	02000
		JELGA	010	FACF	IF		FB				02000
		TIYGO	020	FAF	TF		FB	0.5	129.9(135T)	006.3	02000
		RW13	030	MAP	TF		FO	0.3	130.0(135T)	004.9	00416

MISSED APPROACH	FIX	SEQ	USE	PATH	TURN	FO/FB	RNP	MAG(TRUE)	DISTANCE	ALTITUDE
	WATLE	040		DF		FO				02000
	WATLE	050		HM	R	FO	2.0	310.1(315T)	004.0	02000

POINT DATA	WAYPOINT	LAT IN SECS	LONG IN SECS	LAT IN MINS	LONG IN MINS
	CUGSO	N333843.12	W0940512.67	N3338.719	W09405.211
	GIGVE	N333105.22	W0941417.72	N3331.087	W09414.295
	JELGA	N333529.61	W0940903.29	N3335.494	W09409.055
	TIYGO	N333100.16	W0940340.66	N3331.003	W09403.678
	WATLE	N331917.17	W0934942.90	N3319.286	W09349.715

RUNWAY DATA	RWY	THRESHOLD ELEVATION	TCH
	RW13	00362	54

CITY AND STATE	ELEVATION: 390 TDZE: 387 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP: AMDT: NONE DATED:
TEXARKANA, AR	TEXARKANA REGIONAL-WEBB FIELD	RNAV	RNAV (GPS) RWY 14, ORIG	

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ALL AFFECTED PROCEDURES REVIEWED? ☐ YES ☐ NO	COORDINATES OF FACILITIES	REQUIRED EFFECTIVE DATE

COORDINATED WITH:

ATA ☐ AAT ☐ ALPA ☐ APA ☐ AOPA ☐ NBAA ☐ OTHER (specify) ☐

FLIGHT CHECKED BY		
NAME:	FIFO	DATE:

DEVELOPED BY		
NAME:	NFPG	DATE:

APPROVED BY		
NAME:	NFPG	DATE:

CHANGES:

REASONS:

Figure K-5.

US DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

RNAV (RNP) - STANDARD,
INSTRUMENT APPROACH PROCEDURE, - TITLE 14 CFR PART 97.33

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above aiport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES, (CONT.):

FROM	TO	COURSE AND DISTANCE	ALTITUDE
CATIG (IF)	HIDOP (TF) (FB) (RNP 0.30)	028.99 / 4.20	4000
HIDOP	SUDRE (TF) (FB) (RNP 0.30)	030.96 / 4.61	3100
AKAKE (IF)	RAROE (TF) (FB) (RNP 0.30)	228.76 / 4.48	4000
RAROE	FATEV (TF) (FB) (RNP 0.30)	228.71 / 2.31	3300
FATEV	CODIL (RF) (FB) (RNP 0.30)	(2.47 NM RADIUS CW XUJGY) / 3.91	2200
CENED (IF)	IDADE (TF) (FB) (RNP 0.30)	139.37 / 4.40	5400
IDADE	ZEDNA (TF) (FB) (RNP 0.30)	137.19 / 3.42	4500
ZEDNA	FATEV (RF) (FB) (RNP 0.30)	(2.47 NM RADIUS CW XUJGY) / 3.94	3300
CODIL (FAF)	RW32R (MAP) (TF) (FO)	319.43 / 3.65	
RW32R (MAP)	HIKAM (TF) (FB) (RNP 1.00)	319.42 / 7.01	
HIKAM	OTSEE (TF) (FO) (RNP 1.00)	317.08 / 5.05	3300

NOTES, (CONT.):
CHART PLANVIEW NOTE AT AKAKE : MAX 210 KIAS.
CHART PLANVIEW NOTE AT SUDRE : MAX 180 KIAS.
CHART PLANVIEW NOTE AT ZEDNA : MAX 180 KIAS.
CHART PLANVIEW NOTE AT CATIG : MAX 210 KIAS.
CHART PLANVIEW NOTE AT FATEV : MAX 180 KIAS.
CHART PLANVIEW NOTE AT AGEME : MAX 180 KIAS.
CHART PLANVIEW NOTE AT GEEZR : MAX 210 KIAS.
CHART PLANVIEW NOTE ADJACENT TO GEEZR IF: RF REQUIRED.
CHART PLANVIEW NOTE ADJACENT TO CATIG IF: RF REQUIRED.
CHART PLANVIEW NOTE ADJACENT TO AKAKE IF: RF REQUIRED.
CHART PLANVIEW NOTE ADJACENT TO CENED IF: RF REQUIRED.
CHART PLANVIEW NOTE AT JESGA: (RNP 0.30).
CHART PLANVIEW NOTE AT GEEZR: (RNP 0.30).

CITY AND STATE	ELEVATION: 984 THRE: 981 / AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO./ AMDT NO./EFFECTIVE DATE:	SUP: / AMDT: NONE / DATED:
OMAHA, NE	EPPLEY AIRFIELD	RNAV	RNAV (RNP) Z RWY 32R, ORIG	

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ALL AFFECTED PROCEDURES REVIEWED? ☐ YES ☐ NO	COORDINATES OF FACILITIES	REQUIRED EFFECTIVE DATE

COORDINATED WITH:

ATA ☐ AAT ☐ ALPA ☐ APA ☐ AOPA ☐ NBAA ☐ OTHER ☐ (specify) ____________________

FLIGHT CHECKED BY		
NAME:	FIFO	DATE:

DEVELOPED BY		
NAME:	FIFO	DATE:

APPROVED BY		
NAME:	FIFO	DATE:

CHANGES:

REASONS:

Figure K-6.

US DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION **RNAV (RNP) - STANDARD, INSTRUMENT APPROACH PROCEDURE, - TITLE 14 CFR PART 97.33**	Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above aiport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

CHART PLANVIEW NOTE AT CATIG: (RNP 0.30).
CHART PLANVIEW NOTE AT AKAKE: (RNP 0.30).
CHART PLANVIEW NOTE AT CENED: (RNP 0.30).
CHART NOTE: FOR INOPERATIVE ALSF, INCREASE RNP 0.11 ALL CATS VISIBILITY TO 1 1/4 , RNP 0.15 ALL CATS VISIBILITY TO 1 1/2 , RNP 0.30 ALL CATS VISIBILITY TO 2 1/4 .
CHART NOTE: FOR UNCOMPENSATED BARO-VNAV SYSTEMS, PROCEDURE NA BELOW -17C (2F) OR ABOVE 46C (114F).
CHART PROFILE NOTE: SEE PLANVIEW FOR MULTIPLE IF LOCATIONS.
CHART PLANVIEW NOTE: RADAR REQUIRED.

CITY AND STATE	ELEVATION: 984 THRE: 981 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO./ AMDT NO./EFFECTIVE DATE:	SUP:
OMAHA, NE	EPPLEY AIRFIELD	RNAV	RNAV (RNP) Z RWY 32R, ORIG	AMDT: NONE DATED:

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ALL AFFECTED PROCEDURES REVIEWED? ☐ YES ☐ NO	COORDINATES OF FACILITIES	REQUIRED EFFECTIVE DATE
COORDINATED WITH: ATA ☐ AAT ☐ ALPA ☐ APA ☐ AOPA ☐ NBAA ☐ OTHER ☐ (specify) ______		
FLIGHT CHECKED BY		
NAME:	FIFO	DATE:
DEVELOPED BY		
NAME:	FIFO	DATE:
APPROVED BY		
NAME:	FIFO	DATE:
CHANGES:		
REASONS:		

Appendix L. Final Approach Segment (FAS) Data Block Cyclic Redundancy Check (CRC) Requirements

Content of the FAS Data Block. Each FAS data block contains 22 elements (fields) (20 elements for GBAS) that include the CRC remainder. The specific order and coding of the fields must be followed rigorously to ensure avionics compatibility. Until the process for electronic transmittal of this data is developed by AeroNav Products, the following FAS Data Block information must be documented on Form 8260-10, Continuation Sheet, especially prepared for that purpose (see figures L-1 and L-2). This form will comprise the protected data pending development of an internal CRC process, and will be forwarded to the charting agencies for further processing and CRC protection. For helicopter Point-in-Space (PinS) operations, see RTCA Document DO-229D, appendix Q, for unique FAS Data Block requirements.

1. Fields needed for the Final Approach Segment (FAS) Data Block record for approaches using WAAS (LPV and LP minima) are included in the CRC wrap (see table L-1):

Table L-1.

Data Field	Field Size	Data Type
Operation Type	2 characters	Unsigned Integer
SBAS Service Provider Identifier	2 characters	Unsigned Integer
Airport Identifier	4 characters	Alphanumeric
Runway	2 characters	Numeric
Runway Letter	2 characters	Numeric
Approach Performance Designator	1 character	Unsigned Integer
Route Indicator	1 character	Alpha
Reference Path Data Selector	2 characters	Unsigned Integer
Reference Path Identifier (Approach ID)	4 characters	Alphanumeric
LTP or FTP Latitude	11 characters	Alphanumeric
LTP or FTP Longitude	12 characters	Alphanumeric
LTP or FTP Ellipsoidal Height	6 characters	Signed Integer
FPAP Latitude	11 characters	Alphanumeric
FPAP Longitude	12 characters	Alphanumeric
Threshold Crossing Height	7 characters	Alphanumeric
TCH Units Selector (meters or feet used)	1 character	Feet or Meters
Glidepath Angle (GPA)	4 characters	Unsigned Integer
Course Width at Threshold	5 characters	Unsigned Integer
Length Offset	4 characters	Unsigned Integer
Horizontal Alert Limit (HAL) (LPV & LP Procedures)	3 characters	Numeric
Vertical Alert Limit (VAL) (LPV Procedures)	3 characters	Numeric

2. Fields needed for integrity monitoring, and calculated using binary representation of FAS Data Block [as described in RTCA/DO-229C, Minimum Operational Performance Standards for Global Positioning System/Wide Area Augmentation System Airborne Equipment and as amended by TSO-C146A] see table L-2).

Table L-2.

Data Field	Field Size	Data Type
Precision Approach Path Point Data CRC Remainder	8 characters	Hexadecimal

3. Fields not included in the FAS Data Block, but needed for the Precision Approach Path Point record, and which are not CRC wrapped (see table L-3).

Table L-3.

Data Field	Field Size	Data Type
ICAO Code	2 characters	Alphanumeric
LTP Orthometric Height	6 characters	Signed Integer
FPAP Orthometric Height	6 characters	Signed Integer
Horizontal Alert Limit (HAL) (GBAS procedures only)	3 characters	Numeric
Vertical Alert Limit (VAL) (GBAS procedures only)	3 characters	Numeric

4. Explanation of data field entries (in the general order they appear in the FAS Data Block):

a. Operation Type. A number from 0 to 15 that indicates the type of the final approach segment.

Example: 0 is coded for a straight-in and offset approach procedure.

b. SBAS Service Provider Identifier. A number from 0 to 15 that associates the approach procedure to a particular satellite based approach system service provider.

0 = SBAS (WAAS)
14 = GBAS

c. Airport Identifier. The four-character ICAO location identifier assigned to an airport. Where there is a national airport identifier but no ICAO location identifier, the three- or four-character national identifier is used. Where only three characters are provided, the trailing space is to be left blank.

Example: KDEN, YSSY, NZWN, FAEL, 3SL_, OH23

d. Runway. Runways are identified by two characters "RW" followed by the runway number. The runway number field valid range is 01 to 36.

Examples: RW26, RW08, RW18, RW02

Note: For WAAS based circling only procedures, the runway number field may be encoded as the procedure final approach course, rounded to the closest 10 degrees, and truncated to two characters. For final approach courses from 355 degrees to 004 degrees, the truncated closest 10 degree value is "36."

e. Runway Letter. A runway letter (left (L), right (R), or center (C)) is used to differentiate between parallel runways. The valid range is 00 through 11. The convention for coding is as follows:

00 = no letter	10 = C (center)
01 = R (right)	11 = L (left)

f. Approach Performance Designator. A number from 0 to 7 that identifies the type of approach. An "0" is used to identify an LPV approach procedure and a "1" indicates a Category I approach procedure. Other values are reserved for future use.

0 = LPV and LP
1 = GLS

g. Route Indicator. A single alpha character (Z through A or blank, omitting I and O) used to differentiate between multiple procedures to the same runway end or heliport. Normally, the first approach to a runway is labeled "Z," except when there is only a single procedure to the runway end. In this case, the field is coded as a blank. Additional alpha characters are incrementally assigned.

Example: Z, Y, X, etc.

h. Reference Path Data Selector (RPDS). A numerical identifier intended for GBAS and is not intended for SBAS (WAAS) operations. A number (0-48) that enables automatic tuning of a procedure by GBAS avionics. This number is obtained from Spectrum engineering. The number is related to the frequency of the VHF data broadcast and a 5-digit tuning identifier. Enter "0" for WAAS operations.

Example: 0

i. Reference Path Identifier (RPI). A three or four alphanumeric character identifier that is used to uniquely designate the reference path. The reference path identifier is synonymous with the "approach ID" located beneath the channel number on instrument approach plates. For WAAS procedures, this identifier is defined with a "W" signifying WAAS followed by the runway number, and a trailing alpha character. For point-in-space procedures, the final approach course rounded to the closest 10 degrees replaces the runway number. The last character, beginning with the letter "A," excluding the letters "C," "L," and "R," will be used to define the first procedure, followed by a succeeding letter for each procedure to a particular runway. For example, an airport has three parallel runways and the left and right runways have both a straight-in procedure and an offset procedure; the center runway has a straight-in procedure only. The following (extreme) examples would be applicable:

Example:

W09A & W09B would define the two unique FAS data blocks to RWY 09L.
W09D would be used to define the FAS data block for RWY 09C.
W09E & W09F would be used to define the FAS data blocks for RWY 09R.

Note 1: These suffixes do not have to be in any particular order so as to allow procedures to be added at a later time without changing existing FAS data blocks.

Note 2: For circling only procedures, the two digit runway number should be encoded as the procedure final approach course, rounded to the closest 10 degrees, and truncated to the leading two characters. For final approach courses from 355 degrees to 004 degrees, the truncated closest 10 degree value is "36."

For GBAS procedures, the RPI and RPDS must be unique within the reception range of the assigned frequency (e.g. ~160 NM) of a given ground station. Spectrum Engineering will determine, assign and track RPIs and RPDSs for all requested procedures based on the assigned station frequency, transmitter separations standards and NFDC policies for determining unique identifiers.

j. Landing Threshold Point (LTP) or Fictitious Threshold Point (FTP) - Latitude. Represents the latitude of the threshold defined in WGS-84/NAD83 coordinates and entered to five ten-thousandths of an arc second (The last digit must be rounded to either a 0 or 5). Use the FTP Latitude for offset procedures. The most significant bit is the sign bit: 0 = Positive (Northern Hemisphere); 1 = Negative (Southern Hemisphere). However, for documentation purposes identify the Latitude as follows:

Example: 225436.2125N (11 characters) for 22°54'36.2125" N

k. Landing Threshold Point (LTP) or Fictitious Threshold Point (FTP) - Longitude. Represents the longitude of the threshold defined in WGS-84/NAD83 coordinates and entered to five ten-thousandths of an arc second (The last digit must rounded to either 0 or 5). Use the FTP Longitude for offset procedures. The most significant bit is the sign bit: 0 = Positive (Eastern Hemisphere); 1 = Negative (Western Hemisphere). However, for documentation purposes identify the Latitude as follows:

Example: 1093247.8780E (12 characters) for 109°32'47.8780" E

l. LTP or FTP Height Above Ellipsoid (HAE). The height expressed in meters reference the WGS-84/NAD83 ellipsoid (see Order 8260.58, for additional guidance regarding HAE). The first character is a + or – and the resolution value is in tenths of a meter with the decimal point suppressed. Use the LTP HAE for offset procedures.

Example: +00356 (+35.6m), -00051(-5.1m), +01566 (+156.6m), -00022 (-2.2m)

m. Flight Path Alignment Point (FPAP) – Latitude. A point located on a geodesic line or an extension of a geodesic line calculated between the LTP and the designated center of the opposite runway-landing threshold. It is positioned at a distance from the LTP to support a prescribed procedure design angular splay and course width, as well as functionality associated with an aircraft. It is used in conjunction with the LTP to determine the lateral alignment of the vertical plane containing the path of the RNAV final approach segment. On shorter runways, the FPAP may be located off the departure end of the landing runway. The latitude of the runway FPAP is defined in WGS-84/NAD83 coordinates and entered to five ten-thousandths of an arc second (The last digit must be rounded to either a 0 or 5). The most significant bit is the sign bit: 0 = Positive (Northern Hemisphere); 1 = Negative (Southern Hemisphere). However, for documentation purposes identify the Latitude as follows:

Example: 225436.2125N (11 characters) for 22°54'36.2125" N

n. FPAP - Longitude. The longitude of the runway FPAP is defined in WGS-84/NAD83 coordinates and entered to five ten-thousandths of an arc second (The last digit must be rounded to either a 0 or 5). The most significant bit is the sign bit 0 = Positive (Eastern Hemisphere); 1 = Negative (Western Hemisphere). However, for documentation purposes identify the Latitude as follows:

Example: 1093247.8780E (12 characters) for 109°32'47.8780" E

o. Threshold Crossing Height (TCH). The designated crossing height of the flight path angle above the LTP (or FTP). The allowable range of values is defined in Order 8260.3, Volume 3, table 2-3.

Example: 00055.0 (55.0 feet); 00042.0 (42.0 feet)

p. TCH Units Selector. This character defines the units used to describe the TCH.
Example: F = feet M = meters

q. Glidepath Angle. The angle of the approach path (glidepath) with respect to the horizontal plane defined according to WGS-84/NAD83 at the LTP/FTP. It is specified in degrees.

(1) FAA policy is to publish a Vertical Descent Angle (VDA) that may be used as advisory vertical guidance on all nonprecision approaches. Therefore, a VDA to provide advisory vertical guidance on an LP procedure is accomplished by coding a Glidepath Angle.

(2) The AIM, AC 20-138 and other FAA publications make it clear that the VDA is for information only, is strictly advisory in nature, and there is no implicit additional obstacle protection below the MDA.

(3) For LP approaches, see paragraph "x," Vertical Alert Limit (VAL), Note 1.

(4) The following limitations must be met to code a GPA for LP procedures:

(a) Final approach segment must be "straight-in."

(b) Flight Inspection has no objection to publishing a VDA; see paragraph 8-6-8s.

Example: 02.75 (2.75°), 04.20 (4.20°), 03.00 (3.00°)

r. Course Width at Threshold. The lateral displacement from the path defined by the FAS at the LTP/FTP at which full-scale deflection of a course deviation indicator is attained. Use the applicable "WIDTHmeters" value from the "FAS data" formula specified in Order 8260.58, Volume 6.

Example: 106.75

s. Δ Length Offset. The distance from the stop end of the runway to the FPAP. It defines the location where lateral sensitivity changes to the missed approach sensitivity. The value is in meters with the limits being 0 to 2032 m. This distance is rounded to the nearest 8-meter value. If the FPAP is located at the designated center of the opposite runway end, the distance is zero. For offset procedures, the length of offset is coded as zero.

Example: 0000, 0424

t. Precision Approach Path Point CRC Remainder. An 8-character hexadecimal representation of the calculated remainder bits used to determine the integrity of the FAS Data Block data during transmission and storage. This information will be computed electronically with use of the electronic transmittal software and documented on Form 8260-10 (see figures L-1 and L-2).

Example: CRC Remainder: E104FC14

u. ICAO Code. The first two designators of the ICAO location identifier, as identified in ICAO Doc 7910. In the Continental United States, the country code will begin with the letter "K" followed by a numeric character obtained from figure L-3. Alaska, Hawaii, and U.S. Possessions will be as described in the ICAO Doc 7910.

Example: K1, K7, PH, PA, MM, ER

v. Orthometric Height. The height of the LTP or FPAP, as related to the geoid, and presented as an MSL elevation defined to a tenth of a meter resolution with the decimal point suppressed. For the purpose of documenting this in the "Additional Path Point Record Information," the LTP and FPAP orthometric height will be the same and based on the LTP elevation. The value is preceded by a "+" or "-."

Example: +00362 (+36.2m), +02478 (+247.8m), -00214 (-21.4m)

w. Horizontal Alert Limit (HAL). The HAL is the radius of a circle in the horizontal plane (the local plane tangent to the WGS-84/NAD83 ellipsoid), with its center being at the true position, that describes the region which is required to contain the indicated horizontal position with the required probability for a particular navigation mode assuming the probability of a GPS satellite integrity failure being included in the position solution is less than or equal to 10^{-4} per hour. The range of values is 0 to 50.8m with a 0.2 resolution. The HAL for LPV procedures is a fixed value at 40.0 meters.

Note: A HAL is not part of the FAS data block/CRC wrap for GBAS procedures.

Example: HAL 40.0

x. Vertical Alert Limit (VAL). The VAL is half the length of a segment on the vertical axis (perpendicular to the horizontal plane of the WGS-84/NAD83 ellipsoid), with its center being at the true position, that describes the region which is required to contain the indicated vertical position with a probability of $1\text{-}10^{-7}$ per approach, assuming the probability of a GPS satellite integrity failure being included in the position solution is less than or equal to 10^{-4} per hour. The range of values is 0 to 50.8m with a 0.2 resolution. The VAL for LPV procedures is a fixed value at 50.0 m where the HAT is 250 feet or greater. If an LPV procedure has been established to support a HAT less than 250 feet (no less than 200 feet), a VAL of 35m will be used.

Note 1: A VAL of 00.0 indicates that the vertical deviations must not be used (i.e., a lateral-only {LP} approach).

Note 2: A VAL is not part of the FAS data block/CRC wrap for GBAS procedures.

Example: VAL 50.0   VAL 35.0

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Figure L-1.

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION **RNAV (GPS) STANDARD INSTRUMENT APPROACH PROCEDURE FLIGHT STANDARDS SERVICE - FAR PART 97.33**	Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above aiport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

FAS DATA BLOCK INFORMATION

DATA FIELD	DATA
OPERATION TYPE	0
SBAS SERVICE PROVIDER IDENTIFIER	0
AIRPORT IDENTIFIER	KTXK
RUNWAY	RW13
APPROACH PERFORMANCE DESIGNATOR	0
ROUTE INDICATOR	
REFERENCE PATH DATA SELECTOR	0
REFERENCE PATH IDENTIFIER (APPROACH ID)	W13A
LTP/FTP LATITUDE	332731.8700N
LTP/FTP LONGITUDE	0935931.8200W
LTP/FTP ELLIPSOIDAL HEIGHT	+00834
FPAP LATITUDE	332628.7500N
FPAP LONGITUDE	0935816.5200W
THRESHOLD CROSSING HEIGHT (TCH)	00054.0
TCH UNITS SELECTOR (METERS OR FEET USED)	F
GLIDEPATH ANGLE (GPA)	03.00
COURSE WIDTH AT THRESHOLD	106.75
LENGTH OFFSET	1360
HORIZONTAL ALERT LIMIT (HAL)	40.0
VERTICAL ALERT LIMIT (VAL)	50.0
CRC REMAINDER	1E25CEDC

ADDITIONAL PATH POINT RECORD INFORMATION

ICAO CODE	K4
LTP ORTHOMETRIC HEIGHT	+01103
FPAP ORTHOMETRIC HEIGHT	+01103

CITY AND STATE	ELEVATION: AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO./ AMDT NO./EFFECTIVE DATE:	SUP:
TEXARKANA, AR	TEXARKANA REGIONAL-WEBB FIELD	RNAV	RNAV (GPS) RWY 13, ORIG-A	AMDT: NONE
				DATED:

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Figure L-2.

ALL AFFECTED PROCEDURES REVIEWED? ☐ YES ☐ NO	COORDINATES OF FACILITIES		REQUIRED EFFECTIVE DATE
COORDINATED WITH: ATA ☐ AAT ☐ ALPA ☐ APA ☐ AOPA ☐ NBAA ☐ OTHER (specify) ☐			
FLIGHT CHECKED BY			
NAME:		FIFO	DATE:
DEVELOPED BY			
NAME:		NFPG	DATE:
APPROVED BY			
NAME:		NFPG	DATE:
CHANGES:			
REASONS:			

Figure L-3.


WASH
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OKLA
TEXAS
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Appendix M. Final Approach Segment (FAS) Data Block Cyclic Redundancy Check (CRC) Requirements for Helicopter Operations – RESERVED

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Appendix N. ARINC 424 Database Codes

1. Waypoint Description Codes. The following Waypoint Description Codes are used by navigation database developers and documented as described in paragraph 8-5-2.

Table N-1. Waypoint Description Codes

Waypoint Description Type/Function	En route, STAR, APRCH for the line "Airport as Waypoint" Used On	COL 40	COL 41	COL 42	COL 43
Airport as Waypoint	STAR, APCH	A			
Essential Waypoint[1]	En route, SID, STAR, APCH	E			
Off Airway Waypoint[2]	En route	F			
Runway as Waypoint, Helipad as Waypoint	SID, STAR, APCH	G			
Heliport as Waypoint	STAR, APCH	H			
NDB NAVAID as Waypoint	En route, SID, STAR, APCH	N			
Phantom Waypoint[3]	SID, STAR, APCH	P			
Non-Essential Waypoint[4]	En route	R			
Transition Essential Waypoint[5]	En route	T			
VHF NAVAID as Waypoint	En route, SID, STAR, APCH	V			
Flyover Waypoint, End of SID, STAR Route Type, APCH Transition or Final Approach[6]	SID, STAR, APCH		B		
End of En route Airway or Terminal Procedure Route Type	En route, SID, STAR, APCH		E		
Uncharted Airway Intersection[7]	En route		U		
Fly-Over Waypoint[8]	SID, STAR, APCH		Y		
Unnamed Stepdown Fix after Final Approach Fix[20]	APCH			A	
Unnamed Stepdown Fix Before Final Approach Fix[20]	APCH			B	
ATC Compulsory Waypoint[9]	En route			C	
Oceanic Gateway Waypoint[10]	En route			G	
First Leg of Missed Approach Procedure[11]	APCH			M	
Path Point Fix[19]	APCH			P	
Named Stepdown Fix[18]	APCH			S	
Initial Approach Fix[12]	APCH				A
Intermediate Approach Fix[13]	APCH				B
Initial Approach Holding Fix	APCH				C
Initial Approach Fix with Final Approach Course Fix	APCH				D

Final End Point Fix[16]	APCH				E
Published Final Approach Fix or Database Final Approach Fix[14]	APCH				F
Holding Fix	En route, SID, STAR, APCH				H
Final Approach Course Fix[15]	APCH				I
Published Missed Approach Point Fix[17]					M

2. Waypoint Description Code Definition/Description. Fixes are located at positions significant to navigation in the En route, Terminal Area, and Approach Procedure path definitions. The "Waypoint Description Code" field enables that significance or function of a fix at a specific location in a route to be identified. The field provides information on the type of fix. As a single fix can be used in different route structures and multiple times within a given structure, the field provides the function for each occurrence of a fix.

a. Source/Content: Valid contents for the "Waypoint Description Code" are contained in Table N-1. The contents of Column 40 provide information on the fix type. Column 41 is used to define whether the fix is a "fly-over" or "fly-by" fix and to indicate the charting status of some waypoints. Columns 42 and 43 provide the fix function information. Column 40, Code "G," is valid for Runway as Waypoint and Helipad as Waypoint. Explanation of superscript notes and other details required to understand Table N-1:

(1) Any waypoint (not NAVAID, Airport, or Runway) in Terminal Procedures or any waypoint (not NAVAID or airport) on En route Airways, required for navigation such as a change in bearing, intersection of two airways, beginning or ending of continuous segment.

(2) Any waypoint published by government source but not part of any route structure.

(3) A waypoint established during procedure coding on the nominal track.

(4) Any waypoint (not NAVAID **or airport**) on En route Airways that is not considered "Essential" or "Transition Essential."

(5) Any waypoint (not NAVAID **or airport**) on En route Airways for the purpose of transitioning between the En route and Terminal structures.

(6) A fly-over waypoint (including NAVAID) specified by the procedure: (a) at the end of a SID or STAR Route Type; (b) at the end of an Approach Transition for FMS, GPS, or RNAV approach; or (c) at the missed approach point in an Approach Procedure.

(7) Any waypoint (not NAVAID and airport) on En route Airways that has not been established by government source. Used only in conjunction with "E" in Column 40.

(8) Any waypoint (including NAVAID **and airport**) that must be over flown before establishing on the following leg.

(9) Any waypoint (including NAVAID and airport) on En route Airways at which a "position report" must be made to the appropriate Air Traffic Control unit.

(10) Any waypoint (including NAVAID) designated as the start/end of an oceanic organized track system.

(11) Coded on the first leg after a runway fix or missed approach point fix dependent on approach procedure coding rules. The leg may be the first leg of a published missed approach procedure or a leg to the published missed approach point.

(12) Any waypoint (including NAVAID) established as an Initial Approach Fix.

(13) Any waypoint (including NAVAID) established as an Intermediate Approach Fix and not coded as a Final Approach Course Fix.

(14) Any waypoint (including NAVAID) established as a Final Approach Course Fix. This may be a fix published as the Final Approach Fix by a government source or when no such fix is published, one established by a data supplier.

(15) Any waypoint (including NAVAID) established as a Final Approach Course Fix. This may be a fix published as the Final Approach Course Fix by government source or when no such fix is published but yet required, one established by a data supplier.

(16) Any waypoint established as the Final End Point. This may be a fix published as the FEP by the government source or when no such fix is published but yet required, the data supplier establishes one. It is used in vertical coding of nonprecision approach procedures.

(17) Any waypoint (including NAVAID or Runway) established as a Missed Approach Point by government source. The code is used in conjunction with "G" in Column 40 when the Runway is the published Missed Approach Point.

(18) Any waypoint established and named by the government source lying between the Final Approach Fix and the Missed Approach Point or between a published Final Approach Course Fix and a Final Approach Fix.

(19) Any waypoint established by the government source in support of RNAV-GPS/GLS Approach Procedures. Path Points are not part of the defined procedure track but are provided in a separate record where required. The points are not named and are always referred to as Path Point 1 and Path Point 2.

(20) Any published but unnamed waypoint lying between the Final Approach Fix and the Missed Approach Point (Code "A") or between the Final Approach Course Fix and the Final Approach Fix (Code "B").

Note 1: Column 40, the fix type column, may be blank when a particular leg of a procedure does not include a fix, such as those legs ending in intercepts or terminating altitudes.

Note 2: With the rules provided for Columns 42 and 43, as further explained by references 11 and 17, it is possible to have the code "M" in both of the columns for one leg in cases where a runway fix which is not the designated missed approach point has been inserted into the procedure coding.

Appendix O. Instrument Flight Procedures (IFP) Lifecycle

1. This appendix consists of "basic" information pertaining to the "lifecycle" of an FAA developed IFP (See figures O-1 through O-7). Non-FAA IFP developers "lifecycle" processes will, for the most part, match the FAA process, however, they may have additional steps unique to individual company policies. This appendix does not apply to Special IFPs; see Order 8260.60, Special Instrument Procedures, for information on the processing of those IFPs.

2. Obtaining/meeting operations and/or aircraft approval requirements necessary for using an IFP are the responsibility of the user and not part of an IFP lifecycle. However, if it has been determined that an IFP is no longer needed due to the user(s) inability to meet operational and/or aircraft approval requirements, the IFP would be subject to the processes described in Figure O-6, for the "Maintain" phase of the IFP.

Figure O-1. Overview

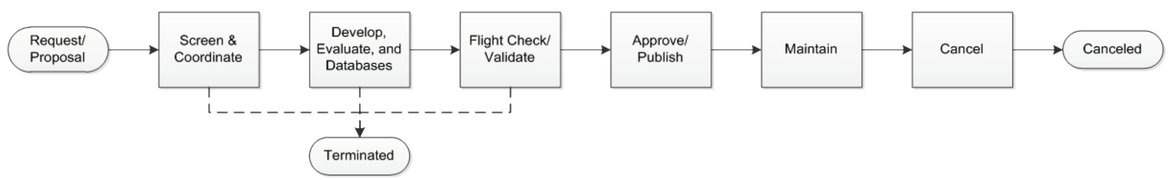

Figure O-2. Process for the "Screen & Coordinate" Phase

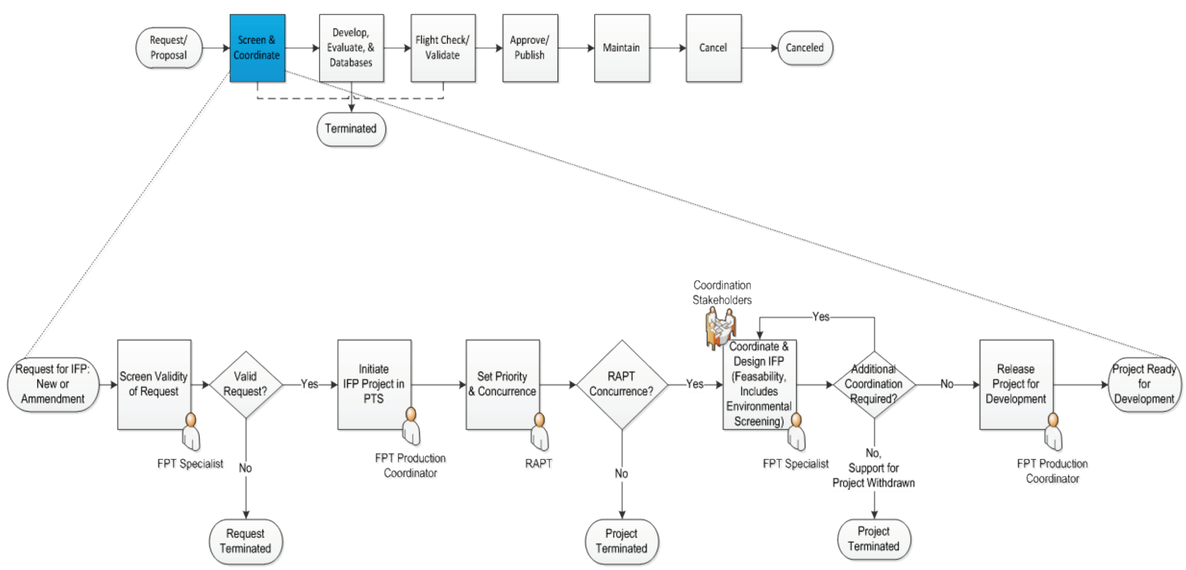

Figure O-3. Process for the "Develop, Evaluate, & Databases" Phase

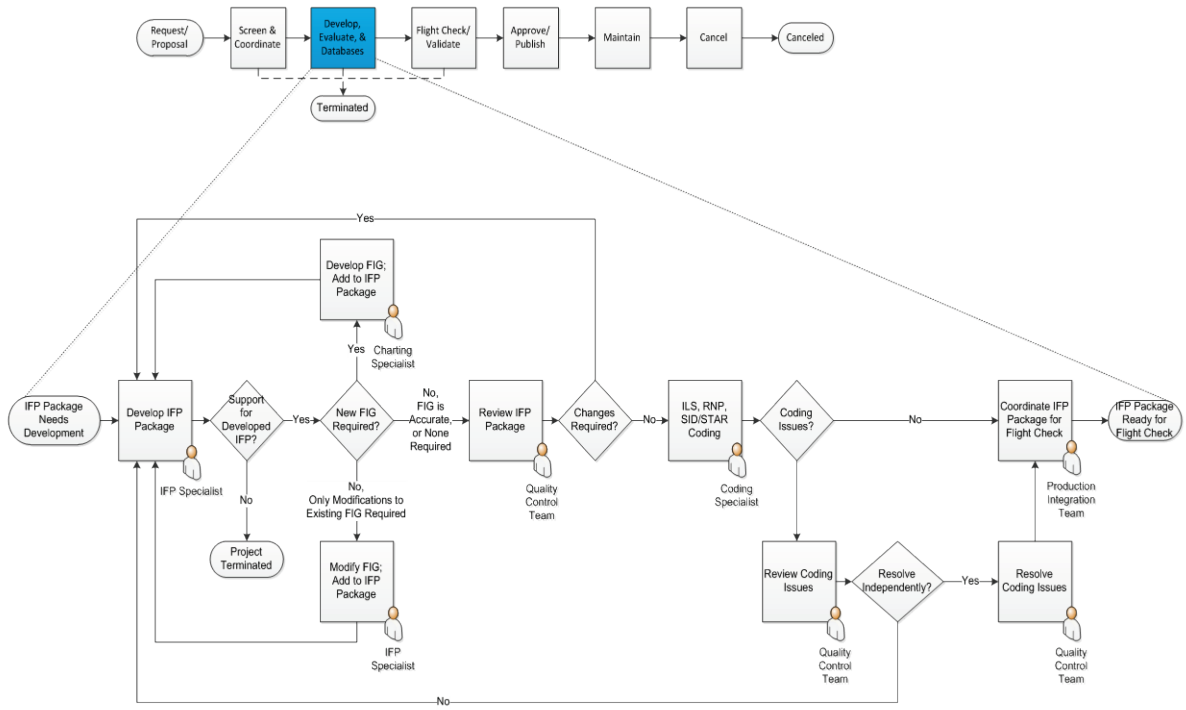

Figure O-4. Process for the "Flight Check/Validate" Phase

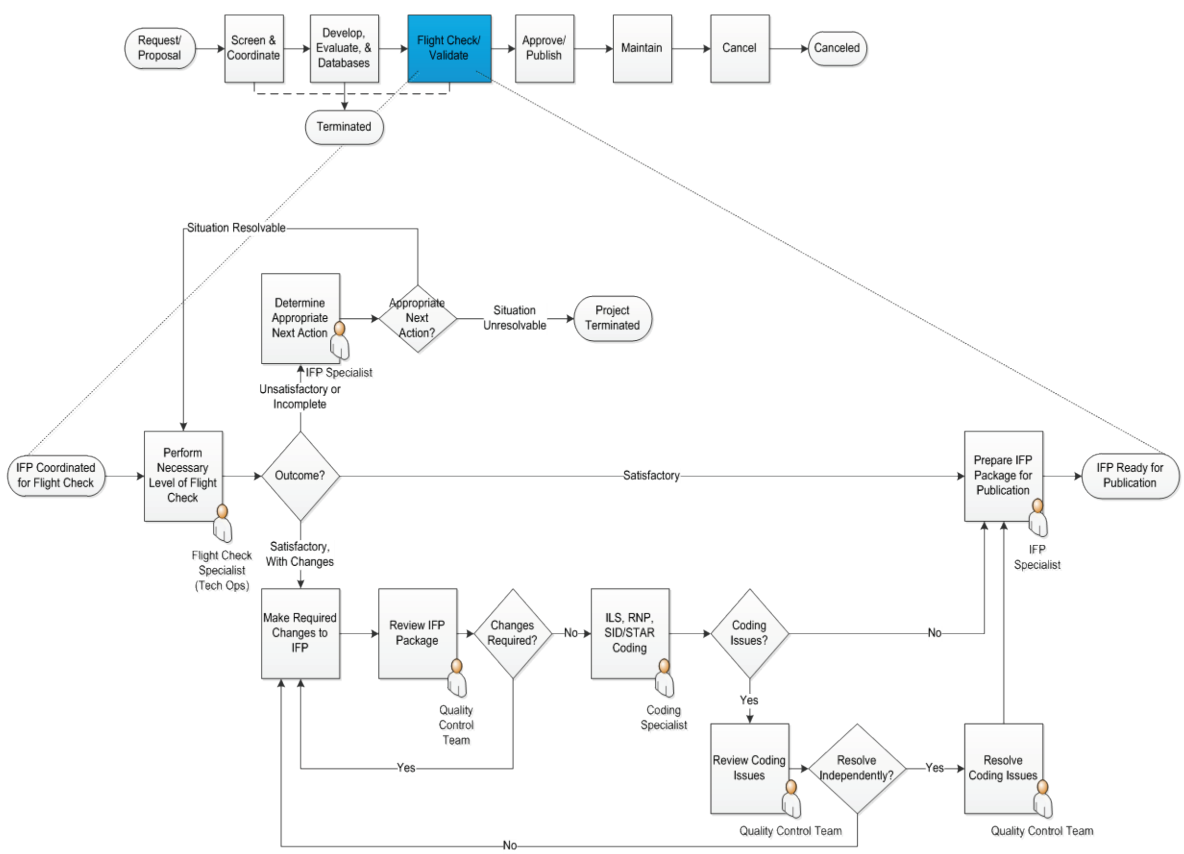

Figure O-5. Process for the “Approve and Publish” Phase

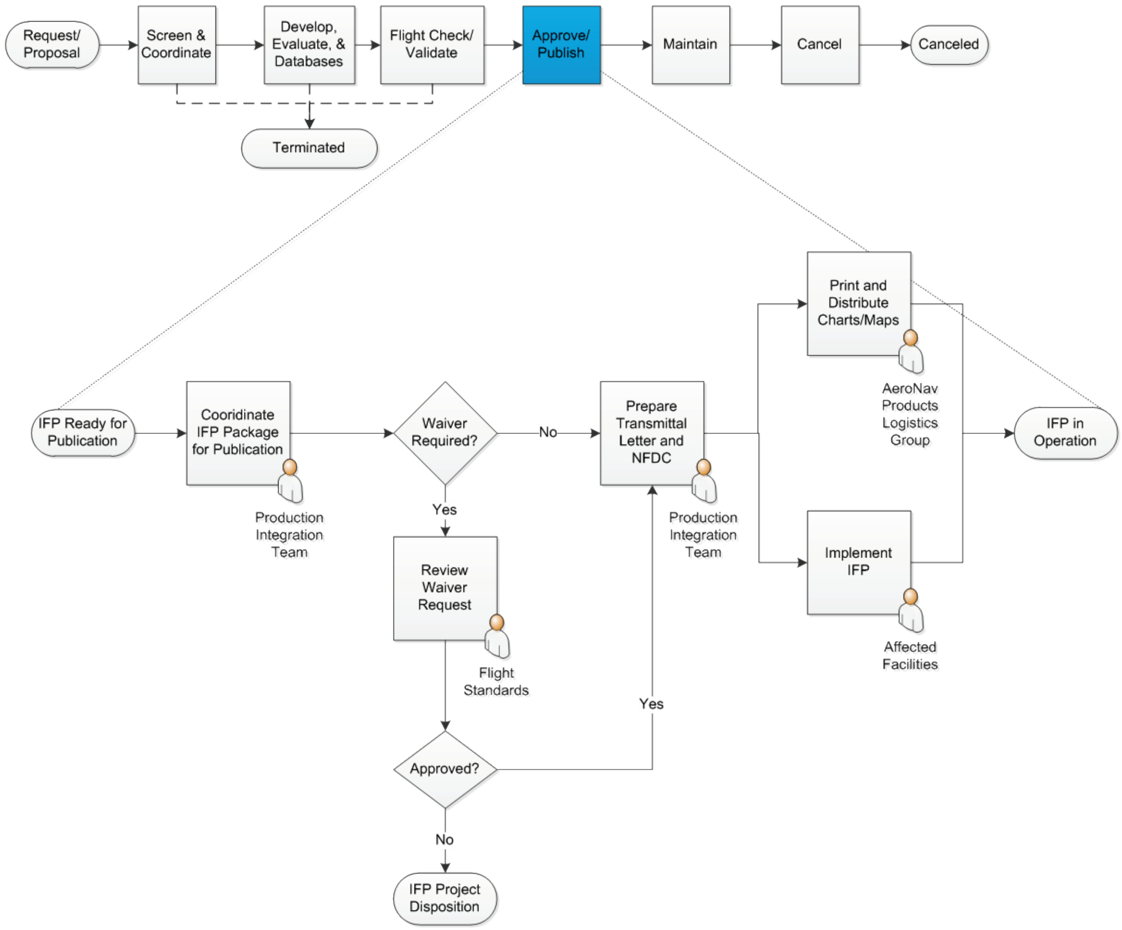

Figure O-6. Process for the "Maintain" Phase

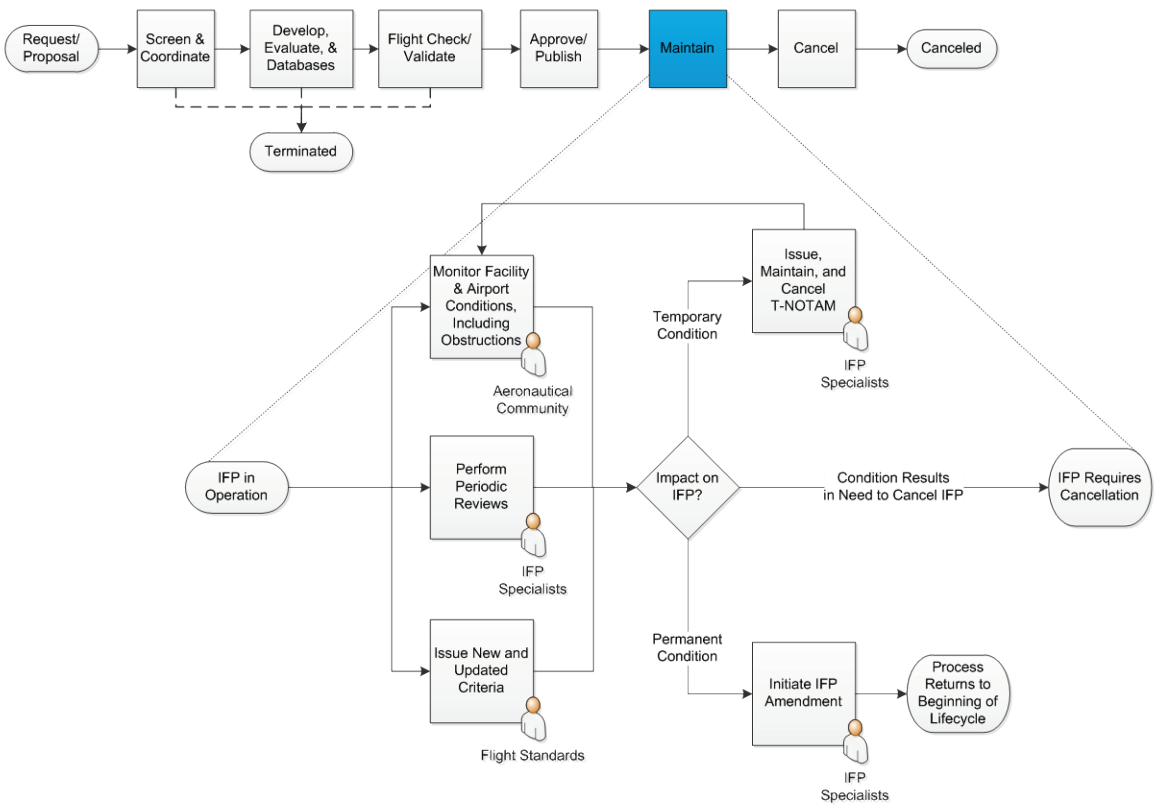

Figure O-7. Process for the "Cancel" Phase