U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
National Policy

ORDER
8260.19D

08/27/2007

SUBJ: Flight Procedures and Airspace

This order provides guidance for all personnel in the administration of the Flight Procedures and Airspace Program. It defines responsibilities, establishes criteria, and provides standards to ensure effective and orderly processing of all types of procedures actions.

The Flight Procedure Standards Branch, AFS-420, of the Flight Technologies and Procedures Division, AFS-400, is responsible for the rulemaking process of the Flight Procedures Program which includes development, application, and oversight of the National Flight Procedures Program and development of criteria pertinent to designing instrument flight procedures.

Procedures personnel must use sound judgment, imagination, and initiative in carrying out their assigned responsibilities and duties. They are encouraged to recommend improved methods of operation.

Due to the extensive revisions incorporated in this Order and to provide a sufficient amount of time for instrument procedure specialists to be trained, an effective date has been established as specified in paragraph 103.

Original Signed By
Carol Giles

James J. Ballough
Director, Flight Standards Service

Distribution: A-W(SY/PO/UA/AR/ND/AS/FS/AT/AF)-3; ATA-100 (15 Cys); AJW-351 (15 Cys); AJW-32 (200 Cys); AJR-33 (10 Cys); AMA-200 (12 Cys); A-X(FS/AT/AF/AS)-3; A-FFS-0 (STD); AEU-1 (10 Cys); A-FAF-O (STD); ZVN-826; Special Military and Public Addressees

Initiated By: AFS-420

RECORD OF CHANGES

8260.19D

CHANGE TO BASIC	SUPPLEMENTS			OPTIONAL USE	CHANGE TO BASIC	SUPPLEMENTS			OPTIONAL USE

FAA Form 1320-5 SUPERSEDES PREVIOUS EDITION

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

Page

SECTION 8. STANDARD TERMINAL ARRIVAL (STAR)

SECTION 9. RNAV PROCEDURE DEVELOPMENT

CHAPTER 5. AIRSPACE

SECTION 1. OBSTRUCTION EVALUATION (OE)

SECTION 2. DESIGNATION OF CONTROLLED AIRSPACE

SECTION 3. AIRPORT AIRSPACE ANALYSIS

SECTION 4. RESERVED

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued

Page

TABLE OF CONTENTS (Continued)

CHAPTER 1. ADMINISTRATIVE

SECTION 1. GENERAL

100. PURPOSE.

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

101. 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, and Technical Operations Services), and Flight Standards Service; to the Aeronautical Information Management Group, the National Flight Procedures Office, Airspace and Rules Group, the National Aeronautical Charting Office, 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.

102. CANCELLATION.

a. Order 8260.19C, *Flight Procedures and Airspace*, dated September 16, 1993, is canceled.

b. Order 8260.33, *Instrument Approach Procedures Automation (IAPA) Program*, dated March 30, 1982, is canceled.

103. EFFECTIVE DATE. November 26, 2007.

104. EXPLANATION OF CHANGES.

a. Management titles, organizational identifications, routing codes, and responsibilities updated to reflect the current organizational structure.

b. Chapter 1.

(1) Paragraph 111. Updates and clarifies the responsibilities of the Flight Technologies and Procedures Division (AFS-400.

(2) Paragraph 113. Updates and clarifies the responsibilities of the Technical Operations Aviation Standards Office.

(3) Paragraph 114b(4). Clarifies NOTAM responsibility for the Aeronautical Information Management Group.

(4) Paragraph 116. Policy for transferring special instrument procedure maintenance responsibilities added.

(5) Section 3. Responsibilities for instrument procedure software development clarified.

c. Chapter 2.

(1) Paragraph 201. Guidance for submission of requests for public-use procedures and assignment of priority clarified.

(2) Paragraph 205d. Clarifies that the National Flight Procedures Office (NFPO) is responsible for reviewing government procedure charts to ensure correct portrayal and is the focal point for questions concerning procedural data on the charts. Also clarifies that the National Flight Data Center (NFDC) serves as the focal point for questions concerning non-procedural data.

(3) Paragraph 205e. Adds responsibility that the National Aeronautical Charting Office (NACO) ensures the U.S. Government aeronautical charts conform to Inter-Agency Air Cartographic Committee (IACC) specifications.

(4) Paragraph 210f. Adds guidance for preparing and processing expanded service volume (ESVs).

(5) Paragraph 213c. Adds specification that 75 MHz markers must not be used to denote turn points on departure procedures (DPs).

(6) Paragraph 216a(3). Adds NACO responsibility to revise en route charts to apply yearly magnetic variation (MV) change values to area navigation (RNAV) Q routes.

(7) Paragraph 221b. Clarifies the use of permanent and temporary Flight Data Center (FDC) NOTAMs.

(8) Paragraph 222a. Assigns the NFPO the responsibility to develop procedures for T-NOTAM quality control, transmittal, cancellation, and follow-up actions.

(9) Paragraph 222b. Assigns the NFPO the responsibility for chart review and cancellation of FDC NOTAMs.

(10) Paragraph 223a. Assigns the NACO the responsibility for issuing FDC P-NOTAMs and developing procedures for P-NOTAM quality control, transmittal, cancellation, and follow-up actions.

(11) Paragraph 226e. Adds requirement for the NFDC to advise the NFPO whenever a NOTAM D relating to a NAVAID outage is canceled and published in the AFD.

(12) Paragraph 226f. Adds guidance and examples for FDC NOTAMs to support area navigation (RNAV) substitution.

(13) Paragraph 226i. Provides additional guidance on suspension of Category (CAT) II/III minimums.

(14) Paragraph 228. Adds guidance to support FDC NOTAMs for Special instrument approach procedures (Specials).

(15) Paragraph 241a(8). Adds process for coordinating proposed instrument flight procedure (IFP) changes.

(16) Paragraph 264a(4). Expands policy for missed approach point identification.

(17) Paragraph 264a(11). Provides guidance on naming PFAF.

(18) Paragraph 271. Provides information regarding the content of the digital obstacle file (DOF) of manmade obstructions maintained by the NACO.

(19) Paragraph 274. Provides guidance on application of an Adverse Assumption Obstacle (AAO) under Title 14 Code of Federal Regulations (14 CFR) Part 77.13 and specifies areas that are exempt from AAO application.

(20) Paragraph 275. Clarifies guidance relating to vertical datums.

d. Chapter 3.

(1) Paragraph 300a. Adds the term Air Traffic Service (ATS) Routes and includes RNAV as a navigation source.

(2) Paragraph 320b. Adds note to clarify the rounding process for minimum en route altitudes (MEAs) to the nearest 100 ft that must not cause less than the required obstacle clearance.

(3) Paragraph 351a. Provides additional guidance for coordinating procedures for new or revised National Airspace System (NAS) routes.

(4) Paragraph 360. Makes reference to Notice 8260.64, *Radar Approaches and Minimum Vectoring Altitudes - Current Guidance and Criteria*.

(5) Paragraph 361. Clarifies areas of consideration for both MVA and MIA charts.

(6) Paragraph 362a. Adds requirement to include AAO additive to terrain values for both MVA and MIA charts.

(7) Paragraph 362b. Clarifies floor of controlled airspace application for both MVA and MIA charts, and requires NFPO to ensure correct application.

(8) Paragraph 362c. Clarifies rounding process for MVAs and MIAs to ensure correct ROC application.

(9) Paragraph 363. Clarifies policy for obstacle clearance reductions and requires a record of approval to include rationale.

(10) Paragraph 364a. Expands paragraph to allow an approved automation tool for MVA and MIA development and submission.

e. Chapter 4.

(1) Paragraph 404e(1). Specifies that, when using an alpha naming convention, "Z" will be used for the procedure with the lowest minimums.

(2) Paragraph 404i. Expands NoPT application for feeder routes.

(3) Paragraph 430a. Requires a visual descent point (VDP) for localizer and LNAV when combined with a vertically guided approach procedure.

(4) Paragraph 431. Adds guidance for VDP application when using backup remote altimeter source.

(5) Paragraph 441. Entire paragraph updated to clarify and expand responsibilities of the Flight Standards District Office (FSDO)/ Certificate Management Office (CMO), Regional Flight Standards Division-All Weather Operations Program Manager (RFSD-AWOPM), National Flight Procedures Office (NFPO), and AFS-200/400/800 when processing Special instrument procedure requests (Specials).

(6) Paragraph 442a(2). Expands NOTAM policy for Specials.

(7) Paragraph 442a(11). Requires the proponent/operator to provide the RAPT a graphic portrayal when submitting a Special.

(8) Paragraph 442b. Specifies the minimum requirements for Special procedure packages when submitted to AFS-400 for approval.

(9) Paragraph 442c. Requires a copy of the Special Procedure Checklist when submitting a Special for AFS approval.

(10) Paragraph 443. Adds a new paragraph to cover minor revisions of Special procedures.

(11) Paragraph 491b(1). Requires RNAV procedure design to an ILS-equipped runway to emulate the ILS procedure to the extent possible.

(12) Paragraph 491d. Adds option to design RNAV required navigation performance (RNP) procedures with different RNP values in the final approach segment.

(13) Paragraph 492b. Adds guidance for documenting on 8260-series forms the waypoint description codes for all waypoint fixes used in RNAV procedure designs.

(14) Paragraph 492d(7). Adds guidance for RNAV stepdown fixes within procedure segments.

(15) Paragraph 497. Provides supplementary guidance on critical temperatures for barometric vertical navigation (Baro VNAV) operations.

(16) Paragraph 499. Entire paragraph updated to provide additional guidance for documenting information for LNAV/VNAV, RNP, and WAAS procedures.

f. Chapter 5.

(1) Section 4, Controlled Firing Areas (CFAs). Removed at the request of the Airspace and Rules Group. CFAs are approved by the applicable Air Traffic Service Center office. They are subject to an aeronautical review and the Service Center issues an approval letter that specifies the conditions and safety precautions that must be used. Guidance for CFAs is published in Order 7400.2, *Procedures for Handling Airspace Matters,* chapter 27. Minimum required precautionary measures are set forth in Order 7400.2, paragraph 27-3-2. Order 7400.2 does not address coordination of CFA proposals with the NFPO. Order 7400.2 will be amended to ensure that Service Centers coordinate proposed CFAs with Flight Standards to obtain input on local VFR operations.

g. Chapter 6.

(1) Paragraph 600. Adds statement 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."

(2) Paragraph 603. Adds guidance for military to contact AFS-420 for assistance on instrument procedures design, criteria, etc.

h. Chapter 7.

(1) Paragraph 705c. Provides guidance concerning waiver action to support new construction.

i. Chapter 8. Refines and expands guidance for preparing and completing forms for various instrument approach procedures. It also contains some new sample forms.

j. Appendix 1. New appendix added to provide a listing of acronyms and abbreviations used throughout the Order.

k. Appendix 2. Flight procedures references updated.

l. Appendix 3. Obstacle accuracy standards, codes, and sources updated.

m. Appendices 5 through 11. Sample forms updated to reflect revised format.

n. Appendix 13. FAS data block cyclic redundancy check (CRC) requirements updated to reflect requirements for LAAS and LPV procedures.

105. FORMS.

a. The following forms are provided in electronic form for use in the development and maintenance of flight procedures.

FAA FORM NUMBER	**TITLE**
FAA Form 8260-1	Flight Procedures Standards Waiver
FAA Form 8260-2	Radio Fix and Holding Data Record
FAA Form 8260-3	ILS-Standard Instrument Approach Procedure
FAA Form 8260-4	Radar Standard Instrument Approach Procedure
FAA Form 8260-5	Standard Instrument Approach Procedure
FAA Form 8260-7	Special Instrument Approach Procedure
FAA Form 8260-9	Standard Instrument Approach Procedure Data Record
FAA Form 8260-10	Standard Instrument Approach Procedure (Continuation Sheet)
FAA Form 8260-11	U.S. Army/U.S. Air Force ILS Standard Instrument Approach Procedure
FAA Form 8260-12	U.S. Army/U.S. Air Force Radar Standard Instrument Approach Procedure
FAA Form 8260-13	U.S. Army/U.S. Air Force Standard Instrument Approach Procedure
FAA Form 8260-15A	Takeoff Minimums and Textual Departure Procedures (DP)
FAA Form 8260-15B	Graphic Departure Procedures (DP)
FAA Form 8260-15C	Departure (Data Record)

FAA Form 8260-15D	Departure Procedure (Continuation)
FAA Form 8260-16	Transmittal of Airways/Route Data
FAA Form 8260-20	U.S. Army/U.S. Air Force Standard Instrument Approach Procedure (Continuation Sheet)
FAA Form 8260-21A	U.S. Army/U.S. Air Force Departure Procedures/Takeoff Minimums
FAA Form 8260-21B	U.S. Army/U.S. Air Force Standard Instrument Departure (SID)
FAA Form 8260-21C	U.S. Army/U.S. Air Force Departure (Data Record)
FAA Form 8260-21D	U.S. Army/U.S. Air Force Departure Procedure (Continuation)

b. Computer Generated Forms. Most FAA forms used in the development of instrument procedures can be automated through the use of an approved electronic forms software package.

(1) Implementation. The implementation of this system will reduce the errors and tedium of completing procedures forms either by hand or by the typewriter. This system also allows information to be extracted from sources such as text files and other databases.

(2) Use of Automated Forms. This automated process allows each user to fill in forms completely and accurately, and to print the forms. The Flight Procedure Standards Branch, AFS-420, provides administrative control over any modification of the automated forms. Direct any recommendations for changes or modifications to AFS-420 with a courtesy copy to the National Flight Procedures Office Automation Support.

(3) Equipment Requirements. Each user office must have access to the appropriate hardware/software to use automated electronic forms software. Contact NFPO for more specific requirements.

(4) System Description. This electronic form processor has a visual interface and allows each user to work with forms using windows, pictures, and menus on a screen. The completed screen data and form may be printed on bond paper.

c. All referenced orders are applicable to the current edition.

106. 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/Shall – action is mandatory.

c. Should - action is desirable.

d. Will – Indicates a presumption that action is to be taken**.**

Appendix 1 provides an alphabetical listing of all the acronyms and abbreviations used throughout this order.

107. INFORMATION UPDATE.

For your convenience, FAA Form 1320-19, Directive Feedback Information**,** is included at the end of this revision to note any deficiencies found, clarification needed, or suggested improvements regarding the contents of this revision. When forwarding your comments to the originating office for consideration, please provide a complete explanation of why the suggested change is necessary.

108.-109. RESERVED.

SECTION 2. RESPONSIBILITIES

110. 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. 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.

111. 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 Part 95 and standard instrument approach procedures under 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 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 FAA Form 8260-10, Special Instrument Approach Procedure, as required, through the Procedures Review Board. Provides technical representation to ICAO on matters related to instrument flight operations, and maintains liaison with foreign civil aviation operational and technical authorities to encourage the acceptance of U.S. instrument flight operations standards and to foster standards with a level of safety consonant with those of the United States.

c. The Flight Procedures 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 and cartographic programs, and is the primary interface for industry on matters relating to instrument procedures criteria. The branch assists 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, that provides simulation of new, emerging, or modified Communications, Navigation, and Surveillance (CNS) technologies and procedures in support of flight safety, accomplished through computer modeling, flight and controller 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, ATO, airports, regions, the aviation industry, and FAA executives who seek objective and subjective safety analysis and assessments to enhance flight operations, standards, capacity, and aviation safety within the NAS and international organizations such as ICAO.

e. The Flight Systems Laboratory, AFS-450, is the principal element within the division that analyzes and quantifies the safety 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.

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 third-party procedure development, maintenance, and flight evaluation/verification of instrument flight procedures. Oversees organizational responsibilities relating to the implementation of instrument flight procedure standards, criteria, policy, software, and flight inspection policy. Develops national and international standards and criteria governing the operational use of instrument flight procedures. Defines responsibilities, establishes policy, and provides standards for orderly processing of all instrument flight procedure actions, international, third-party, and FAA. Evaluates Instrument Flight Pro-cedures from operational and technical viewpoints, provides necessary coordination, and recommends final approval or disapproval of Special instrument flight procedures and waiver of standards for all instrument flight procedures.

g. The Performance Based Flight Systems 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 FAA Form 8260-10, 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 OpSpecs 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.

112. REGIONAL FLIGHT STANDARDS DIVISIONS (AXX-200).

a. The Regional Flight Standards Divisions (RFSD) manage and direct 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.

b. The all weather operations program 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.

(2) Providing technical evaluations in support of regional airspace programs to determine the effect on visual flight operations.

(3) Coordinating the RFSD portion of assigned foreign instrument approach procedures programs.

(4) Coordinating the RFSD involvement in CAT II and III approvals including approval of the associated Surface Movement Guidance System plan.

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

(6) Performing airport/airspace evaluations to address operational safety issues in coordination with the Airports Division, as necessary.

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

(8) Coordinating with Airports Division in the approval or denial of modifications to airport standards.

(9) Providing operational review and comments for Air Traffic Technical Operations Service Area's submission of a NAS Change Proposal (NCP).

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

113. TECHNICAL OPERATIONS AVIATION SYSTEM STANDARDS OFFICE (AJW-3).

a. AJW-3 is the principal element within the Technical Operations Services (AJW-O) directly responsible for the in-flight inspection of air navigation facilities and for the development and maintenance of instrument flight procedures 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. AJW-3 supports the Air Traffic Organization's Obstruction Evaluation Services Team, AJR-322, obstruction evaluation and airport airspace analysis (OE/AAA) program in assessing IFR impact of proposed construction. The Director of AJW-3 also serves as the chairperson of the National Airspace and Procedures Team (NAPT) under Order 8260.43, *Flight Procedures Management Program*.

b. The National Flight Procedures Office (NFPO) is the FAA element responsible for the development, maintenance, quality assurance, and technical approval of public-use instrument procedures. It is also responsible for quality assurance and operations support, as requested, for NAS related products. Upon completion of instrument procedures development, the division forwards completed documentation to the Flight Inspection Operations Group (FIOG) for flight inspection and operational approval. It establishes procedures to ensure operational data is included in the National Airspace System Resources (NASR) database. The NFPO includes a sub-element at each Air Traffic Service Area office identified as a Flight Procedures Field Office. NFPO/FPFO 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**.**

(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 National Airspace System 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) 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 U.S. Army instrument procedures in accordance with current policy.

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

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

(11) Acting as the focal point for flight inspection problems within the region.

c. The Flight Inspection Operations Group (FIOG) 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 the NFPO, 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.

d. The National Aeronautical Charting Office (NACO) is the AJW-3 element responsible for the production and distribution of aeronautical charts and related publications and products. This includes the publication of Standard Instrument Approach Procedure (SIAP), Departure Procedure (DP), Standard Terminal Arrival (STAR) charts, Airport Diagrams, and Special Graphics. NACO responsibilities include but are not limited to:

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

(2) Validating geographical positions, distances, and bearings.

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

(4) Evaluating obstacle source data to certify accuracy codes as built.

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

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

114. AERONAUTICAL INFORMATION MANAGEMENT GROUP (AJR-32).

a. This is the principal element within the Air Traffic Organization, Office of System Operations (AJR-O) 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 group 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 AJW-3 regarding database accuracy standards, content, and format.

b. The National Flight Data Center, (NFDC), is the principal element within AJR-32 with respect to maintaining the National Airspace System Resources (NASR) database and for disseminating information relating to the NAS. NFDC responsibilities include but are not limited to:

(1) Publishing the daily National Flight Data Digest (NFDD) to promulgate additions, changes, and deletions to non-regulatory elements of the NAS.

(2) 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 actions submitted for action, and to identify and correct items in non-conformance with applicable directives.

(3) Validating submitted data with the National Airspace System Resources (NASR) Database and resolving contradictions.

(4) Reviewing and tracking NOTAMs regarding amendments, cancellations, and corrections to instrument procedures and NAVAIDs in the NAS.

(5) Compiling NOTAMs for publication in the Notices to Airmen Publication (NTAP).

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

(7) Promulgating SIAPs and ODPs with assigned effective dates in a bi-weekly transmittal letter and completing necessary requirements for publication in Part 97.

(8) Issuing, on a predetermined schedule, amendments to Part 95.

(9) Maintaining copies of 8260- and 7100-series forms that support public use SIAPs, fixes, airways, STARs, and DPs.

115. 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.

116. TRANSFERRING INSTRUMENT PROCEDURE MAINTENANCE RESPONSIBILITIES.

Instrument procedures are normally maintained by the NFPO; however, Special procedures may be maintained by the proponent. The proponent must show that they are capable of meeting all the requirements stipulated in chapter 4, paragraph 442. 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 the NFPO. This request must indicate how the requirements specified in paragraphs 442a(1) through (4) will be met.

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

(1) Establish transfer date.

(2) Inform the Regional Airspace Procedures Team (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.

117.-119. RESERVED.

SECTION 3. INSTRUMENT PROCEDURE DEVELOPMENT SOFTWARE RESPONSIBILITIES

120. 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.

121. 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.

122. TECHNICAL OPERATIONS AVIATION SYSTEM STANDARDS OFFICE'S RESPONSIBILITY.

AJW-3 is the office of primary interest and is responsible for overall functional management of the FAA instrument procedures software and for ensuring the implementation of AFS-420 defined software requirements.

a. The National Flight Procedures Office 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) The NFPO is responsible for assuring system software is in conformance with established software requirements.

b. The NFPO Quality Oversight and Technical Advisory Team 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 complied within the security control of computer programs and associated documentation.

c. The Flight Inspection Operations Group is responsible for establishing and maintaining the Aviation System Standards Information System (AVNIS) in support of instrument procedure software requirements.

123. 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.

124. 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 automatic data processing (ADP) program management in accordance with Order 1370.52, *Information Resources Policy*.

125. VICE PRESIDENT FOR TECHNICAL OPERATIONS (AJW-O).

The Vice President for Technical Operations 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.

126.-199. RESERVED.

CHAPTER 2. GENERAL PROCEDURES

SECTION 1. GENERAL

200. GENERAL.

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.

201. REQUESTS FOR PUBLIC-USE INSTRU-MENT FLIGHT PROCEDURES.

a. Requests for approval and/or establish-ment of instrument flight procedures may originate from many different sources. 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 AFS personnel. See Order 8260.3, Volume 1, paragraph 121.

b. All requests for public-use instrument flight procedures received by any FAA office must be forwarded to the Flight Procedures Field Office (FPFO) for further handling under Order 8260.43, *Flight Procedures Management Program*. Requirements for approval of instrument approach procedures are contained in Order 8260.3, Volume 1, chapter 1.

c. Procedures with specific effective dates*,* and other urgent projects, will be assigned priorities by the National Flight Procedures Office (NFPO). All other projects will be processed as workload permits, by the NFPO in order of receipt.

202. AIR TRAFFIC LETTERS OF AGREE-MENT.

When letters of agreement affect or include flight procedures, they must be coordinated between ATC facilities and the NFPO.

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

b. Copies of letters of agreement received in the NFPO 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, the NFPO 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 the NFPO is a party to the agreement, it is not a signatory and does not approve or disapprove the agreement.

203. AIRPORT LIGHTING AND VISUAL AIDS.

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

(1) 7110.10, *Flight Services*.

(2) 7110.65, *Air Traffic Control*.

(3) 7210.3, *Facility Operation and Administration*.

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

c. Refer to appendix 1, Flight Procedures References, for other applicable orders and advisory circulars.

SECTION 2. AERONAUTICAL CHARTS

204. USE OF MAPS AND CHARTS.

a. The NFPO 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 U.S. 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), Aviation System Standards Information System (AVNIS), National Aeronautical Charting Office (NACO) 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*, paragraph 6.11].

205. AERONAUTICAL CHARTS AND PUBLICATIONS.

a. Aeronautical charts used for air navigation are generally of two groups: 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 NAS, is the Aeronautical Information Manual (AIM). The primary publication serving as a preflight and planning guide for use by U.S. 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 System Operations Airspace and AIM Office, Publications Group (AJR-31).

c. NFPO 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. The NFPO is responsible for the accuracy and completeness of flight data submitted by that office for publication. Procedure specialists should review the resulting published U.S. Government charts to ensure correct portrayal. The NFPO serves as the focal point for questions regarding the procedural data published on these charts.

e. The 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.

f. NACO is responsible for ensuring that U.S. Government Aeronautical Charts conform to Interagency Air Cartographic Committee (IACC) specifications.

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 the NACO Requirements and Technology Staff. AIM and AIP discrepancies should be referred to the ATO Publications Group, AJR-31.

SECTION 3. ENVIRONMENTAL REQUIREMENTS

206. 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 regional FPFO. The RFSD must review noise abatement procedures for aircraft performance characteristics and operational safety considerations. The regional FPFO 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.

207. ENVIRONMENTAL IMPACTS.

Order 1050.1, *Environmental Impacts: Policies and Procedures*, describes the requirements for documentation of environmental impact or lack of impact concerning actions taken by regional FPFOs. In particular, chapter 3 of the document defines actions that require an environmental assessment or a declaration of categorical exclusion [see also paragraph 303]. Technical Operations Aviation System Standards, AJW-3, will normally act as a responsible federal official (RFO) for all AJW-3 and non-AJW-3 developed procedures. In such capacity, AJW-3 must apply national environmental standards and policies. However, AFS reserves the right to act as RFO for selected non-AJW-3 developed procedures.

SECTION 4. FACILITY UTILIZATION AND MONITORING

208. 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 (FMO) primarily uses this order. The NFPO should maintain a copy of Order 6050.32 on file 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.

209. 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 FAA Form 6050-4, *Expanded Service Volume Request*, is mandatory. Flight check measurements must not be used as a substitute for an approved ESV [see figures 2-1, 2-2, and 2-3].

a. **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 2-1. Standard Class L/H Service Volume.

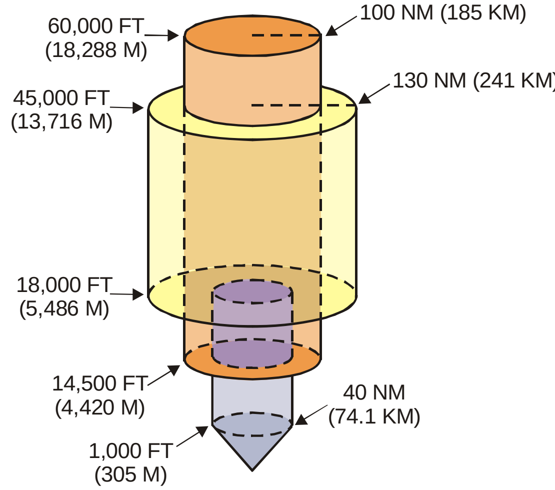


Figure 2-2. Standard Low Altitude Service Volume.

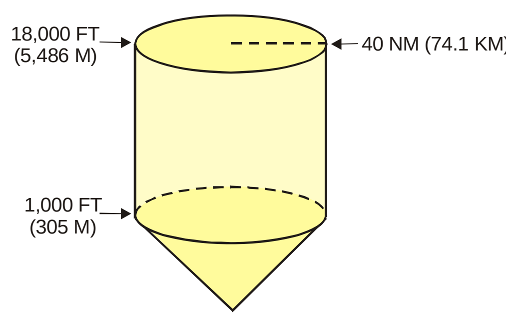
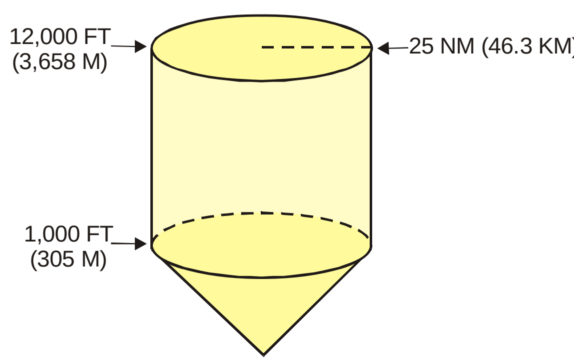


Figure 2-3. Standard Terminal Service Volume.



b. NDB.

Facility Class		Distance (Miles)
COMLO	NOTE: Low frequency	15
MH	beacons have no	25
H	standard height	50
HH	limitations	75

c. ILS.

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

d. MLS [see figures 2-4 and 2-5]**.**

Facility	Height Above Facility	Distance (Miles)
MLS (FC)	20,000 and below	20
MLS (Back AZ)	5,000 and below	20
MLS EL	20,000 and below	20

Figure 2-4. MLS Azimuth Coverage.

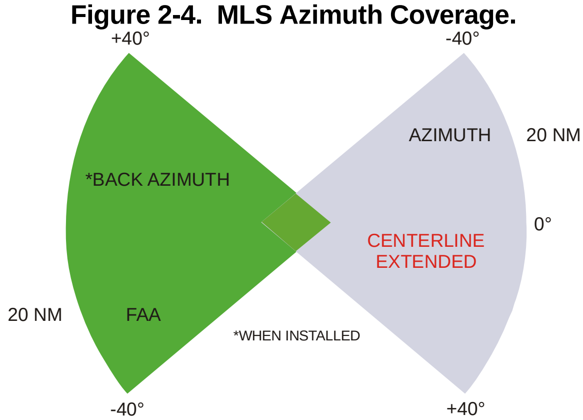
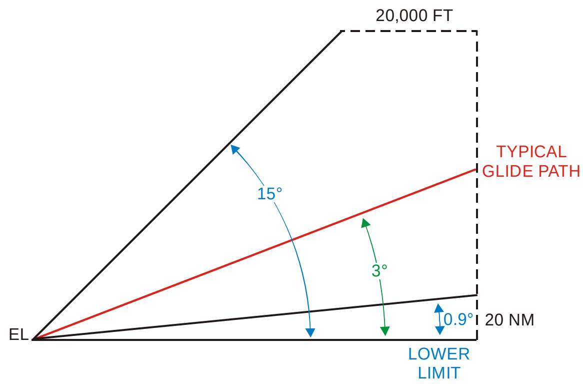


Figure 2-5. MLS Elevation Coverage.



210. REQUESTS FOR EXPANDED SERVICE VOLUMES (ESV).

a. When ATC requires use of NAVAIDs above/below/beyond limitations cited in paragraphs 209a through 209d, ATC submits an ESV request, with a description of the flight procedure requiring it. This request is first reviewed by the Frequency Management Officer (FMO). 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 the NFPO.

b. The National Flight Procedures Office 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 NFPO 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. The NFPO initiates a change action via the Spectrum Management web site (ESVMS) and explains the action required; e.g., "**R-035 changed to R-038 due to variation change to 23E/05 effective 4 AUG 04.**"

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 Expanded Service Volume Management System via the FAA Intranet web site.

211. 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 course guidance must start and end at an approved navigational fix.

b. The use of localizers for en route instrument flight procedures must be limited to those instances where it is essential to air traffic control.

c. Appropriate navigational aids will be recommended at the earliest possible date in order to discontinue the use of the localizer for course guidance in the en route environment.

212. 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. Very high frequency omnidirectional radio range (VOR), very high frequency omnidirectional radio range collocated with tactical air navigation (VORTAC), and ILS facilities as well as new non-directional beacons (NDBs) and marker beacons installed by the FAA, are provided with an internal monitoring feature. Older FAA NDBs and some nonfederal 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.)

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

(3) Category 3. Internal monitoring only. Status indicator is not installed at control point.

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

213. 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 procedures development. The Air Traffic Organization is responsible for issuing

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 guidance; is required for procedure entry; is used to define the FAF; or is used to provide missed approach guidance. See also paragraph 853b.

(2) When a facility is used to designate a stepdown fix, alternate minimums must be no lower than the circling minimums required without the stepdown fix.

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

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

(5) 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.

214. 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 (FAF). 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 10.

SECTION 5. IMPLEMENTING EPOCH YEAR MAGNETIC VARIATION (MV)

215. 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, determine the magnetic variation (MV). Changing values for MV are tabulated and published on a 5-year epoch basis; e.g., 85, 90, 95, 00, 05, etc. In order to assist in stabilizing the National Airspace System (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.

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

(1) National Aeronautical Charting Office (NACO).

(2) Technical Operations Aviation System Standards (AJW-3).

(3) National Flight Data Center (NFDC).

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

(5) Regional Airports Divisions.

(6) Military Organizations.

216. RESPONSIBILITIES.

a. NACO.

(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.

b. Technical Operations Aviation System Standards.

(1) 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 AJW-3 and the Regional Airports, Air Traffic, and the applicable Technical Operations Service Area offices with respect to matters pertaining to change in navigational aid or airport MV of Record and its effect on instrument flight procedures.

(2) Function as the focal point for 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 adjust-ment 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 navigational facilities (including military facilities) and airports in whole degree increments. MVs of record are available in the AVNIS facility database. 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 redesignation of radials are required.

(5) Develop and maintain an official listing/record of navigational aids and airports by geographical location at the end of each Epoch Year to indicate the currently assigned MV of most recent Epoch Year's MV, 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 2 degrees or more between the MV of record and the nearest future Epoch Year value.

(6) Notify NFDC (in AJR-32) 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.

(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, obstacle departure procedures (ODPs), SIDs, 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 chart being used.

(8) 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 IAPs. Modify all 14 CFR Part 95 Direct and Off-Airway (Non-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 ATC (ARTCC and approach control) in an attempt to eliminate routes, fixes, and instrument procedures that are no longer required.

(9) Navigational aids NOT supporting en route structure:

(a) Initiate implementation of the nearest future Epoch Year MV 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 857n and 857o].

(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 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 chapter 4, section 5.

(10) Military Facilities.

(a) Accomplish MV changes for U.S. 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.

(11) Airports.

(a) Amend IAPs, SIDs, and ODPs that specify runway designator numbers affected by MV change.

(b) Notify the applicable Air Traffic Service Area Office of the need for amendment action if STARs contain runway designator numbers affected by MV change.

(c) Take appropriate NOTAM action if repainting of an affected runway is not accomplished on the required date.

c. NFDC. Upon notification by the NFPO of any change to MV of record, publish a notice of change in the NFDD to indicate the effective date of such change.

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

e. Regional Airports Division. Coordinate with the FPFO prior to establishing or revising runway designator numbers for an airport having one or more instrument approach or departure procedures, to determine the MV to be applied to the runway true bearing. Determination of the runway designator number should be a matter of joint agreement with the NFPO, and be accomplished sufficiently in advance to allow for procedural amendments.

f. Military Organizations. Contact the NFPO to obtain the MV of record to be applied to navigational aids or airports under military jurisdiction. Once obtained, it is the responsibility of the military to provide the NFDC (AJR-32) MV updates made to navaids and/or procedures.

217. 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 858e(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, paragraph 7d.

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 3 degrees or more, the MV of record must be changed to the nearest future Epoch Year value. When the difference is less than 3 degrees, AJW-3 must consider implementing the nearest future Epoch Year value when workload permits. 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.

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 bearing must be assigned the same MV as the airport.

Note: The actual runway bearing 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 using 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.

218.-219. RESERVED.

SECTION 6. NOTICES TO AIRMEN (NOTAMs)

220. GENERAL.

NOTAMs provide timely knowledge to airmen, and other aviation interests, of information or conditions that are essential to safety of flight. NOTAMs pertaining to instrument procedures remain in effect until the pertinent charts and publications are amended or the condition requiring the NOTAM ends. This section deals primarily with policy for issuing Flight Data Center (FDC) NOTAMs and NOTAM Ds when required to maintain the accuracy and currency of charted terminal and en route flight procedures. Also see Order 8260.3, *United States Standard for Terminal Instrument Procedures (TERPS)*, paragraph 150e.

221. NATIONAL NOTICE TO AIRMEN SYSTEM.

A National Notice to Airmen System has been established to provide airmen with the current status of the National Airspace System (NAS). This system is under the purview of FAA's Air Traffic Organization, Vice President of System Operations (AJR-0). Management and operational guidance is contained in Order 7930.2, *Notices to Airmen (NOTAMs)*. The following is a brief summary of the different type NOTAMs and issues applicable to instrument procedure changes, NAVAID outages, and government chart corrections.

a. FDC NOTAMs are issued through the U.S. NOTAM Office (USNOF) and primarily used to disseminate safety of flight information relating to regulatory material [see Order 7930.2, chapter 7, for specific FDC NOTAM categories]. FDC NOTAMs are numbered by the U.S. NOTAM System (USNS) to reflect the year of issuance and the sequence number for the calendar year, (e.g., 5/0445). 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 U.S. mail and is available on-line at http://www.faa.gov/airports_airtraffic/air_traffic/publications/notices.

b. FDC NOTAMs may be either temporary (T-NOTAMs) or permanent (P-NOTAMs), as specified below, when used to promulgate changes to published instrument flight procedures, and corrections to U.S. Government charts. FDC NOTAMs must be prefixed with an action code as follows:

(1) FI/T (Flight Information/ Temporary). Use this prefix when safety of flight issues requires changes to SIAPs, airways, or textual DPs. If the condition requiring the NOTAM will be effective for more than four charting cycles (224 days), an abbreviated or full amendment 8260-series form must be submitted to amend the procedure. The 8260-series form must be submitted as soon as possible to allow publication of the procedural change within the 224-day timeframe [see paragraph 813].

(2) FI/P (Flight Information/ Permanent). Use this prefix only to promulgate U.S. Government charting correction information. Cartographic agencies may initiate immediate changes to charted information based upon the P-NOTAM information. P-NOTAMs may **NOT** be used for changes to SIAPs, airways, takeoff minimums, ODPs, SIDs or STARs. Refer to paragraphs 224b and 224c for graphic DP and STAR NOTAM procedures.

c. NOTAM Ds are issued under the Flight Service Stations' Accountability System and receive the same dissemination as the surface weather report for the originating station. NOTAM Ds provide the user with current information on an hourly basis and are numbered to reflect the month of issuance and the sequence number within the month, (e.g., 06/018).

222. FDC T-NOTAM PREPARATION, REVIEW, AND TRANSMITTAL.

a. The NFPO is the primary office responsible for formulating procedural and airway FDC T-NOTAMs and forwarding them for transmittal. The NFPO is also the office of primary responsibility for developing specific internal guidance for T-NOTAM preparation, quality control, transmittal, cancellation, and follow-up actions. This guidance must be developed in concert with the NFDC, the NACO Requirements and Technology Staff (R&T), and the U.S. NOTAM Office (USNOF). AFS-420 must be provided the opportunity to review and comment on the procedures prior to implementation. As a minimum, the following items must be included in the guidance:

(1) Procedures to ensure that all FDC T-NOTAMs are coordinated with the affected ARTCC facility at the time of submission, or if unable, during the next normal workday [see Order 8260.3, Volume 1, paragraph 150]. The NFPO/FPFO must also attempt to notify the airport manager at the affected location whenever possible.

Note: ARTCCs are responsible for forwarding FDC NOTAM information to the affected terminal facilities under Order 7930.2, paragraph 2-2-3.

(2) Procedures to ensure <u>ALL</u> FDC T-NOTAMs are reviewed for accuracy, completeness, content, etc. prior to submission.

(3) Procedures to ensure the NFDC is provided an information copy of all Instrument Flight Procedures (IFP) T-NOTAMs and cancellations to ensure that the NTAP is properly maintained.

(4) Procedures to ensure the USNOF notify the submitting agency and the NFDC of all changes in instrument procedure FDC NOTAM numbering.

(5) Procedures to ensure all FPFO or Flight Inspection Operations Group (FIOG) initiated FDC NOTAMs and NOTAM Ds are coordinated through the NFPO.

b. The NFPO must review amended SIAP charts, take-off minimums, textual ODPs, and en route charts to ensure procedural changes are charted correctly and cancel NFPO initiated FDC T-NOTAMs on the effective date of the amended procedure(s).

c. The NFDC will review applicable FDC NOTAMs for accuracy, format, completeness, and database agreement. Discrepancies noted by NFDC will be forwarded to the originating NFPO branch for resolution. NFDC is also responsible for compiling NOTAMs for inclusion in the NTAP.

d. The USNOF is responsible for ensuring that FDC NOTAMs are in the proper format under this directive and Order 7930.2. Questions/discrepancies will be addressed to the submitting agency or the NFPO as appropriate. The USNOF must ensure that NFDC and the FDC NOTAM originating office are appraised of all changes in instrument procedure related FDC NOTAM numbers; e.g., when a NOTAM is canceled and reissued due to typographical error, etc. The NACO Requirements and Technology Team must be notified if changes are made to P-NOTAMs correcting U.S. Government charts. The FDC NOTAMs affecting FAA developed military SIAPs at civil locations must be issued separately and forwarded to the USNOF military representative.

223. FDC P-NOTAM PREPARATION, REVIEW, AND TRANSMITTAL.

a. The NACO Requirements and Technology (R&T) Team is the primary office responsible for formulating FDC P-NOTAMs used to correct chart printing and compilation errors related to all U.S. Government aeronautical charting products and forwarding them for transmittal.

b. When a printing or compilation error is noted on a U.S. Government aeronautical charting product; e.g., the Terminal Procedures Publication (TPP), NACO, NFPO, NFDC, and the FAA Cartographic Standards Branch will jointly determine if the error can be safely addressed by NOTAM or whether the instrument flight procedure must be suspended pending issuance of a replacement chart. AFS-420 will provide operational/criteria input as required.

c. The NACO R&T Team is also the office of primary responsibility for developing specific internal guidance for P-NOTAM preparation, quality control, transmittal, cancellation, and follow-up actions. This guidance must be developed in concert with the NFDC, the NFPO, and the USNOF. AFS-420 must be provided the opportunity to review and comment on the procedures prior to implementation. As a minimum, the following items must be included in the guidance:

(1) Procedures to ensure that all FDC P-NOTAMs are coordinated with the affected ARTCC facility at the time of submission, or if unable, during the next normal workday. The NACO must also attempt to notify the airport manager at the affected location, whenever possible.

(2) Procedures to ensure that ALL FDC P-NOTAMs are reviewed for accuracy, completeness, content, etc. prior to submission.

(3) Procedures to ensure that the USNOF notifies the NACO Requirements and Technology Team and the NFDC of all changes in chart correction FDC P-NOTAM numbering; e.g., when a NOTAM is canceled and re-issued by the USNOF.

(4) Procedures to ensure the NFDC is provided an information copy of all chart correction P-NOTAMs and cancellations to ensure that the NTAP is properly maintained.

224. INSTRUMENT APPROACH and TEXTUAL DEPARTURE PROCEDURE NOTAMs.

A complete review and a new amendment are the preferred methodology for permanent procedure changes, particularly when applying new or revised TERPS criteria. However, it is recognized that this may not always be possible due to time constraints workload, staffing level, etc. An FDC T-NOTAM followed by an abbreviated 8260-series form within the allotted 224 days is an equally effective means of updating SIAP charts and textual DPs within the following guidelines:

a. Whenever the need for a NOTAM to a procedure arises, AJW-32 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 a SIAP.

b. Procedural minimums must not be lowered *by* NOTAM except as allowed by Order 8260.3, Volume 1, paragraph 150e.

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 T-NOTAM is required prior to AMDT 3A. Issue a T-NOTAM against AMDT 3. When AMDT 3A is published, the T-NOTAM must be canceled and reissued for AMDT 3A.

d. When changes to civil procedures also affect FAA-developed military procedures at civil or joint-use airfields, the NFPO must issue a separate FDC or military-series NOTAM 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*. The NFPO must request the USNOF to forward the civil NOTAM and the reason to the cognizant military authority for appropriate military NOTAM action.

e. NOTAM requirements for FAA developed U.S. Army procedures must be processed under Order 8260.15. NOTAM requirements for FAA developed U.S. Air Force procedures at civil airfields must be processed under Order 8260.32.

225. GRAPHIC ODP, SID, and STAR NOTAM PREPARATION, REVIEW, AND TRANSMITTAL.

a. Changes to graphic ODPs and SIDs must be promulgated as NOTAM Ds under Order 7930.2. The NFPO is responsible for formulating NOTAM Ds for graphic ODPs and SIDs and forwarding them for transmittal by the USNOF. These NOTAMs are issued by the USNOF using the accountability code “USD.”

The following format examples are provided:

USD 12/001 SAN BORDER THREE DEPARTURE JULIAN TRANSITION: FROM OVER BROWS INT VIA JLI R-182 TO JLI VORTAC

USD XX/XXX LAX CHATY TWO DEPARTURE, GORMAN TRANSITION: MINIMUM ALTITUDE BROWS, INT TO GMN VORTAC, 8,000 FT

In the first example above, “USD” is the NOTAM accountability code; “12/001” is the NOTAM number which is assigned by the USNOF (first

NOTAM (D) issued in December); “SAN” indicates the three-letter airport identifier; the remainder is the NOTAM text.

b. Changes to STARs requiring NOTAM action are also promulgated as NOTAM Ds. The appropriate ARTCC is responsible under Order 7930.2 for initiating, tracking, and canceling STAR NOTAMs.

c. The NFPO is the office of primary responsibility for developing specific internal guidance for DP NOTAM D preparation, quality control, transmittal, cancellation, and follow-up actions. This guidance must be developed in concert with the NFDC, NACO R&T Team, and the USNOF. AFS-420 must be provided the opportunity to review and comment on the procedures prior to implementation. The following items must be included in the guidance:

(1) Procedures to ensure that ALL NOTAM Ds are reviewed for accuracy, completeness, content, etc. prior to submission.

(2) For SIDs serving multiple airports, a separate NOTAM D must be prepared for each airport affected by the SID.

(3) Temporary and permanent conditions may be promulgated via the NOTAM D process; however, NOTAM Ds must not be used as a source to effect charting changes. Permanent procedural changes to graphic DPs must be made via a new or amended 8260-15 series form within 224 days of the issuance of the associated NOTAM D.

(4) The USNOF must review each NOTAM D to ensure formatting, contractions, etc. are correct and assign the NOTAM number. Questionable items must be resolved with the originator prior to issuance.

(5) Once issued, the NFPO is responsible for obtaining the NOTAM D number from the USNOF, tracking, and canceling the NOTAM when the condition requiring the NOTAM is no longer applicable.

226. GENERAL NOTAM D ACTIONS.

a. When a NOTAM D is issued closing an airport permanently, an FDC NOTAM need not be issued denying use of a SIAP. 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 straight-in 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 SIAP use is not required for those SIAPs using only that facility. However, other SIAPs in the vicinity must be reviewed to determine if that facility supports courses or fixes; in such cases, those SIAPs 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 which are related to unusable airway segments from the subject facility. Do not issue “Radar Required” NOTAMs on unusable or restricted airway segments [see paragraph 463].

e. Area Navigation (RNAV) Substitution. Aircraft equipped with RNAV systems may substitute them 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 standard terminal arrival (STAR) is restricted or prohibited by NOTAM because of a NAVAID (VOR, NDB, compass locator, or DME) outage, the NOTAM does not apply to aircraft equipped with suitable GPS RNAV systems. For clarification, state the reason for the restriction in the text of the procedural NOTAM D or FDC NOTAM.

Examples:

A DME antenna is out of service: "DME MINIMUMS NA EXCEPT FOR AIRCRAFT

EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS, ORD DME OTS."

An LOM used for procedure entry and/or missed approach clearance limit for an ILS approach is out of service: "PROCEDURE NA EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS, GR LOM OTS."

A VOR is used in a departure procedure (ODP or SID) is out of service: "GEYSER THREE DEPARTURE NA EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS, JAC VOR OTS."

(2) In certain circumstances, AFS-400 may determine that the use of RNAV systems that utilize DME/DME/IRU inputs should be allowed. In these instances, insert the phrase "OR DME/DME/IRU" after "SUITABLE RNAV SYSTEM WITH GPS." Include any required DME facilities to support DME/DME/IRU operations.

Example:

"HOOVER THREE DEPARTURE NA EXCEPT FOR AIRCRAFT EQUIPPED WITH SUITABLE RNAV SYSTEM WITH GPS OR DME/DME/IRU, PGS VOR OTS. BLD AND DRK MUST BE OPERATIONAL FOR DME/DME/IRU ON PEACH SPRINGS TRANSITION. DRAKE TRANSITION NA FOR DME/DME/IRU."

f. When a NOTAM D removes a localizer from service, the SIAP is unusable. If the GS is out, the precision approach is unusable. If other ILS components are out, the inoperative table applies.

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

h. When Airways Facilities issues a NOTAM suspending Category II/III minimums, the NFPO will then amend procedures as required.

227. AIRWAY NOTAMs.

When a restriction or a change to an airway requires a NOTAM, NFPO must prepare and forward an FDC T-NOTAM following the procedures in paragraph 223.

a. NOTAMs, reflecting airway 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 7930.2, chapter 7, section 1 must be followed regarding the number of ARTCCs and states affected.

b. Airway 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 7/0001 ZFW OK FI/T AIRWAY ZFW ZKC. V140 SAYRE (SYO) VORTAC, OK TO TULSA (TUL) VORTAC, OK MEA 4,300.

FDC 7/0002 ZKC OK FI/T AIRWAY ZFW ZKC. 140 SAYRE (SYO) VORTAC, OK TO TULSA (TUL) VORTAC, OK MEA 4,300.

REASON: TEMPORARY NEW TOWER. OE 07-ASW-0123."

c. If the airway NOTAM affects one but less than four ARTCCs and multiple states**,** issue one NOTAM for each affected ARTCC. If the NOTAM affects four or more ARTCCs, send one NOTAM using "FDC" as the facility identifier.

d. If the restriction will exceed the time limit established in paragraph 222b, forward an updated Form 8260-16 and/or 8260-2 simultaneously to NFDC and NACO for charting.

228. 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 U.S. NOTAM system. The AJW-3 NOTAM Entry System (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 the NFPO and the location ***is*** in the U.S. NOTAM system, then procedures for NOTAM processing by the NFPO will be similar to the procedures used for public, part 97 instrument approach procedures. Additionally, when preparing the NOTAM for submission, include the word "SPECIAL" in parenthesis immediately following the city/state and prior to the procedure title [see paragraph 229 for an example]. The NFPO will notify the RFSD-AWOPM as soon as practicable.

b. If the Special is not maintained by the NFPO but the location ***is*** in the U.S. NOTAM system, then the organization responsible for maintaining the procedure will notify the applicable RFSD-AWOPM of the change/ outage. The RFSD-AWOPM will contact the NFPO with the appropriate information, who will take appropriate NOTAM action. If the RFSD-AWOPM cannot be immediately contacted and the condition is critical to flight safety, the Regional FPFO or the NFPO will be contacted directly and provided adequate information to initiate immediate NOTAM action. The NFPO will notify the RFSD-AWOPM as soon as practicable.

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

c. If the Special is maintained by the NFPO and the location ***is not*** in the U.S. NOTAM system, then the NFPO will notify the applicable RFSD-AWOPM of the change/ outage. The RFSD-AWOPM 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 the NFPO and the location ***is not*** in the U.S. NOTAM system, then the organization responsible for maintaining the procedure will notify the applicable RFSD-AWOPM of the change/outage. The RFSD-AWOPM must contact the user(s) of the procedure to disseminate appropriate action (e.g., NA the procedure, raise applicable minimums, etc.).

229. NOTAM CONTENT.

a. FDC SIAP NOTAMs must identify the procedure being amended and the current amendment 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. For example, changes to the touchdown zone or airport elevation, which does not affect visibility minimums, do not require NOTAM action.

b. The text must be prepared by the NFPO using plain language and those contractions found in the NTAP. 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, refer to Order 7930.2, paragraph 4-3-4.

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 text.

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.

Example:

FDC 7/_____ ORD FI/T 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. (Specify distances less than 1 NM in feet.)

REASON: TEMPORARY CRANE FOR
90 DAYS. OE 06-AGL-2689

FDC 7/GPT FI/T 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.

RADAR 1 AMDT 3…
VOR/DME OR TACAN RWY 31 ORIG.
S-31 MDA 660/HAT 633 ALL CATS. VIS CAT C 1-3/4, CAT D 2, CAT E 2-1/4. CIRCLING CATS A/B MDA 660/HAA 632.

TEMPORARY CRANE 410 MSL 1.5 NM SE OF RWY 31.

REASON: TEMPORARY CRANE FOR 160 DAYS. OE 07-ASO-0101

FDC 7/_____ LAN FI/T CAPITAL CITY, LANSING, MI.
ILS RWY 10R AMDT 8A...
ILS RWY 28L AMDT 24...
VOR RWY 6 AMDT 23B...
VOR RWY 24 AMDT 7E...
CIRCLING MDA 1420/HAA 559 ALL CATS.

REASON: NEW BUILDING, 1115 MSL. OE 07-AGL-0123

Note: Since the above condition is permanent, SIAP Amendments must be processed within 224 days.

"FDC 7/_____ PAJN FI/T JUNEAU INTERNATIONAL, JUNEAU, AK
(SPECIAL) LDA-2 RWY 8 AMDT 9…
PROCEDURE TURN NA.

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

FDC 7/_____ AXH FI/T HOUSTON-SOUTHWEST, HOUSTON, TX.
NDB RWY 28 AMDT 4...
LOC/DME RWY 10 AMDT 2A...CHANGE ALL REFERENCE TO RWY 10-28 TO RWY 9-27."

REASON: RUNWAYS RENUMBERED FOR MAGNETIC VARIATION CHANGE.

FDC 5/______FI/P CORRECT U.S. GOVERNMENT CHART NORTH ATLANTIC ROUTE CHART, EFFECTIVE 17 MAR 2005… CORRECT ROUTE IDENTIFIER A763 BETWEEN GRAND TURK ISLAND (GTK) VORTAC AND AGUADILLA (BQN) VORTAC TO R763.

FDC 5/______ FI/P CORRECT U.S. GOVERNMENT IFR EN ROUTE LOW ALTITUDE CHART L-3, PANEL C, EFFECTIVE 18 JAN 2007... VICTOR AIRWAY V458 BTW JLI VORTAC
(N 33 08 25.651/W116 35 09.365)
AND KUMBA INT (N32 45 43.180/W116.03 13.370) MEA SHOULD READ 7700.

FDC 7/______ 7D2 FI/P OAKLAND/TROY, TROY, MI. VOR OR GPS-A, AMDT 3... CORRECT FAF TO READ PERLS INT. VS PERSL INT.

SECTION 7. QUALITY/STANDARDIZATION OF INSTRUMENT FLIGHT PROCEDURES

230. NFPO ACTION.

a. The NFPO 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. The NFPO's 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. AFS-460 will issue appropriate instructions as necessary.

d. Instrument charts produced by the National Aeronautical Charting Office (NACO) will be reviewed by the NFPO, upon receipt, for variations from information submitted for publication and for clarity of the graphic portrayal. Charting errors detected must be forwarded directly to NACO R&T for corrective action under paragraph 224b. Charts that do not clearly portray the procedure(s) as designed should be referred to AFS-460 and the NACO, with recommendations for charting improvements.

231. AFS-460 ACTION.

a. AFS-460 is responsible for providing oversight of the NFPO Quality Assurance (QA) process to determine conformance with applicable criteria, standards, and policy.

b. Preliminary reviews may be conducted by AFS-460 upon request by the NFPO. When unusual circumstances exist, AFS-460 will issue appropriate instructions to the NFPO as necessary.

232.-239. RESERVED.

SECTION 8. PERIODIC REVIEW OF INSTRUMENT FLIGHT PROCEDURES

240. 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. **Immediately** comply with changes to criteria that relate to safety of flight. Use the review to ensure compliance with all other changes to criteria. FPFOs can normally present current reviews of OEs, F&E, and AIP projects pertinent to the review process.

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

c. 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.

241. NFPO ACTION.

a. SIAPs, SIDs, ODPs, 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, the periodic review should include all procedures at that airport [see paragraph 811a].

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

(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) Coordinate proposed IFP changes (including FDC NOTAMs) in advance with the applicable FPFO, airport management, and servicing air traffic control facility when application of new or revised criteria raises minimum procedure altitudes and/or increases landing minimums.

b. Airways, Airway Segments, and Routes.

(1) Review at least once every 4 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 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 10]. Assure that Form 8260-2 entries for facility type, class, radial/course/bearing, distances, least divergence angle, 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 ft of obstacle clearance.

242.-249. RESERVED.

SECTION 9. COMMUNICATIONS AND WEATHER

250. COMMUNICATIONS REQUIREMENTS.

Order 8200.1, *U.S. Standard Flight Inspection Manual*, 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. MEAs or 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 FSDO operations inspector.

251. 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 FAA Handbook 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.

252. 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 855f.

253.-259. RESERVED.

SECTION 10. NAVIGATIONAL FIXES

260. 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.

261. 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.

262. 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 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, Radio Fix and Holding Data Record.

263. 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 through the NFPO. The NFPO may initiate Form 8260-2 for those navigational fixes that are required for the development of IFPs. Other operationally required navigational fixes must be coordinated with the appropriate ATC facility [see chapter 8, section 6].

b. Every effort should be made to use established fixes or NAVAIDs wherever possible in lieu of creating new fixes. Additionally, do NOT create a new waypoint over an existing fix or NAVAID.

264. 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 ASR and/or PAR procedures, RNAV missed approach point at threshold, and an ATD fix located between the MAP and the landing area marking the visual segment descent point on COPTER RNAV PinS approach annotated "PROCEED VISUALLY." 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 7400.2, *Procedures for Handling Airspace Matters*, chapter 3) retains the same name as the facility. Navigational fixes to be named include:

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

(2) DME and Along-Track Distance (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) Missed Approach Points (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.

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

(10) VFR Waypoints. These are non-pronounceable 5-letter names beginning with "VP." Example: VPXYZ

(11) PFAF not collocated with a FAF that is separated by 1 NM or greater shall be a pronounceable, 5-letter name. Newly established PFAFs separated from the FAF of the underlying non-vertically guided procedure by less than 1 NM, must be named but can be treated as a CNF [see paragraph 264a(8)].

Note: Determination as to which fix, PFAF or FAF, should be given a pronounceable fix name or a non-pronounceable fix name should be determined in coordination between the procedure designer and the Air Traffic Control facility providing radar services.

b. Coordinate with NFDC and the appropriate ARTCC when a fix name change is required. Document the change on Form 8260-2.

c. When a fix is moved, the name must be changed if the fix is moved 5 NM or more unless operational requirements dictate otherwise.

265. 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.

266. CORRELATION OF NAVIGATIONAL FIXES AND CHANGEOVER POINTS (COPs).

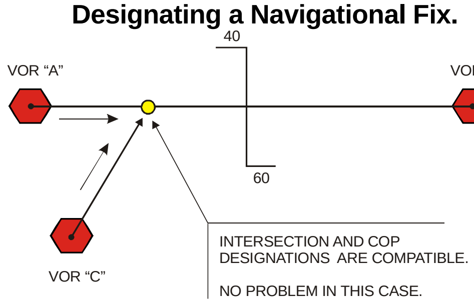
The designation of navigational fixes should be directly related to COPs. Care should be taken to avoid designating navigational fixes that require the use of a facility beyond the COP. Figure 2-6 is an example of the proper and the improper method of designating a navigational fix in relation to COPs.

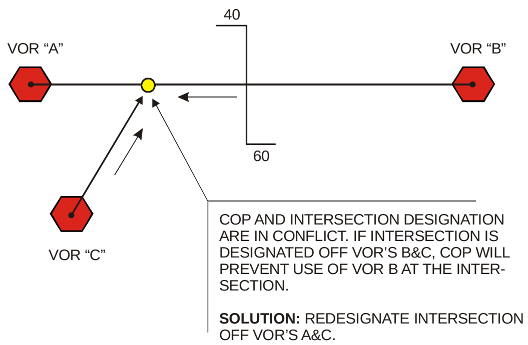
Note. These diagrams illustrate a problem encountered when handling intersections and changeovers. Make certain the entire complex is reviewed to prevent establishing procedures that are in conflict with the usability of the facilities involved.

267. MINIMUM RECEPTION ALTITUDES (MRA).

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 ft or more [see paragraph 841f(3)(j)].

Figure 2-6. Proper and Improper Method of Designating a Navigational Fix.





268. FLIGHT INSPECTION.

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

269. MAXIMUM AUTHORIZED ALTITUDES (MAA).

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 841d(2)(e)].

SECTION 11. OBSTACLE DATA

270. GENERAL.

The primary purpose of obstacle evaluation is to determine how an object will impact 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.

271. OBSTACLE DATA SOURCES.

a. The NACO maintains a Digital Obstacle File (DOF) that includes a record of all manmade obstructions reported under Part 77. It also includes records of manmade obstructions reported through various other sources; e.g., NFPO, flight inspection, the FCC, and the OC program. NACO will provide obstacle data to NFPO as necessary for procedure development under current AJW-3 internal procedures. NACO will provide obstacle data to other FAA offices on a time available basis. Requests for obstacle data should identify DOF NACO number or other identifying number, the area desired by geographical coordinates, or a specified radius from an airport reference point (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, appendix 16, do not preclude development of an instrument procedure. When survey data is not available, use the best available source of obstacle data, e.g., terrain maps, DTED, etc.

272. OBSTACLE DATA ACCURACY STANDARDS FOR INSTRUMENT PROCEDURES.

This paragraph identifies the MINIMUM requirement for accuracy of obstacle data used in the development of instrument procedures, and provides minimum accuracy standards for each instrument procedure segment.

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 2.

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 272b(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 ft laterally, and its elevation data by +50 ft vertically; this is because 4D does not meet or exceed the minimum accuracy requirement of +50 ft horizontal and +20 ft vertical (2C) applicable to the nonprecision final segment.

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

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

(3) +250 ft horizontal and +50 ft vertical accuracy. Intermediate segment. For DPs and SIDs, all areas outside of the ICA.

(4) +500 ft horizontal and +125 ft vertical accuracy; [**1,000 ft ROC and Special ROC (e.g., MVA/MIA reduced ROC in mountainous areas)**]; **(non-mountainous).** Initial segments; feeder segments; en route areas; missed approach holding/level surface evaluation; MSA; ESA; MVA; EOVM; MIA; DF Vector Areas. For SIDs: level route portion.

(5) +1,000 ft horizontal and +250 ft vertical accuracy; (2,000 ft ROC) (mountainous). Feeder segments; en route areas; ESAs; MVA; EOVM; MIA; DF Vector areas. For SIDs: level route portion.

(6) In all cases, 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 273].

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

(9) The NFPO, 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 as provided to the NFPO by NACO. 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 the NACO. Obstacles contained in the Digital Obstruction File (DOF) marked as “DISMANTLED” are not to be used in obstacle assessment of instrument procedures.

273. 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 Obstruction Evaluation (OE) program. The NFPO need not delay further processing of affected procedures pending receipt of higher-level accuracy data ONLY where operationally prudent.

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 860].

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.

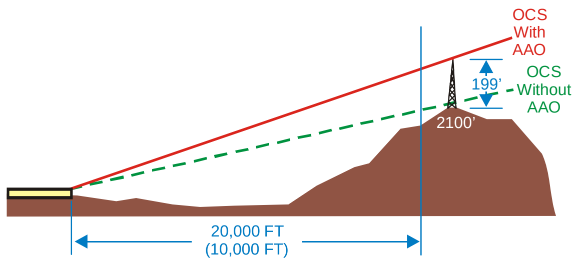
c. Non-RNP Procedure Evaluation Sequence. In either paragraph 274a or b, first determine the controlling obstacle <u>using raw obstacle data only</u> (i.e., accuracy adjustments not applied). Then add horizontal/vertical accuracy code adjustments to the raw values to determine the obstacle's most adverse location and elevation. Accuracy code adjustment is not applied to obstacles evaluated relative to Order 8260.3, Volume 1, paragraphs 289 or 332.

d. RNP Special Aircraft And Aircrew Authorization Required (SAAAR) Procedure Evaluation Sequence. Apply **actual** horizontal and vertical accuracy values in all obstacle evaluations.

274. CONTROLLING OBSTACLES.

Pursuant to the provisions of Part 77.13, an Adverse Assumption Obstacle (AAO) of 200 ft AGL is assumed to exist at and beyond a specified distance (radius) from the nearest landing surface at a given airport/helipad [see figure 2-7A]. As applied to runways, the specified distance is dependent upon runway length [see paragraph 274a(2)]. Use the following process to determine the controlling obstacle within a given procedure segment:

Figure 2-7A. AAO Example.



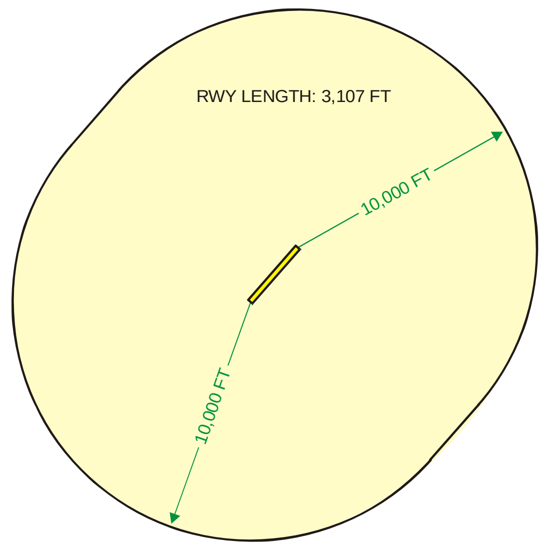
a. For each airport/helipad, establish the AAO exempted area within which a 200 ft AAO **is not** to be considered.

(1) Scribe an arc of specified radius [see figure 2-7B] 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 ft AAO consideration.

(2) AAO Exempt Area radius:

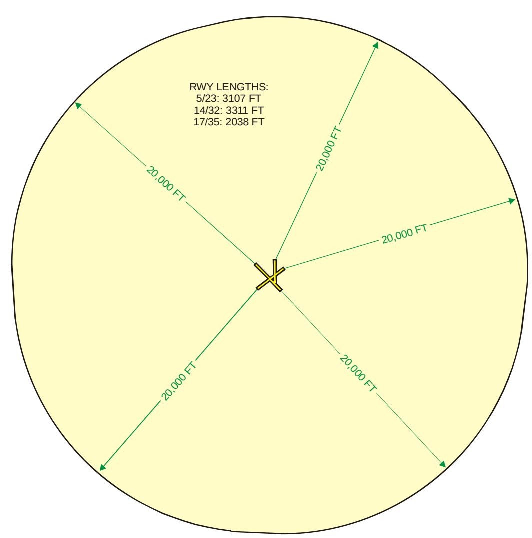
(a) No runway longer than 3,200 ft: 10,000 ft radius from **all** runway ends.

Figure 2-7B. AAO Exempt Area, Runway Length ≤ 3,200 Ft.



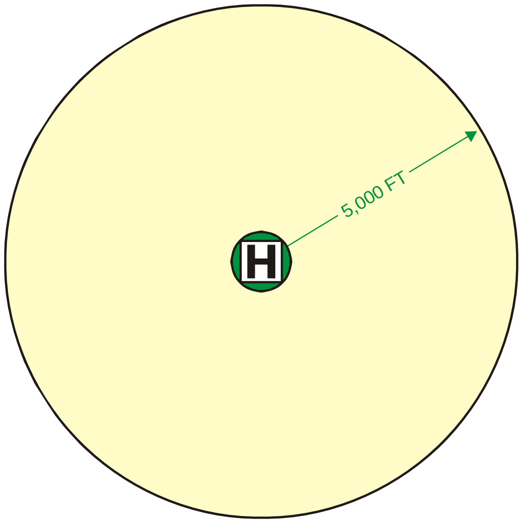
(b) One runway longer than 3,200 ft: 20,000 ft radius from **all** runway ends [see figure 2-7C].

Figure 2-7C. AAO Exempt Area, Runway Length > 3,200 Ft.



(c) Helipad: For heliports with one helipad, use radius of 5,000 ft from the center of the helipad [see figure 2-7D]. 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 2-7D. AAO Exempt Area, Helipad.



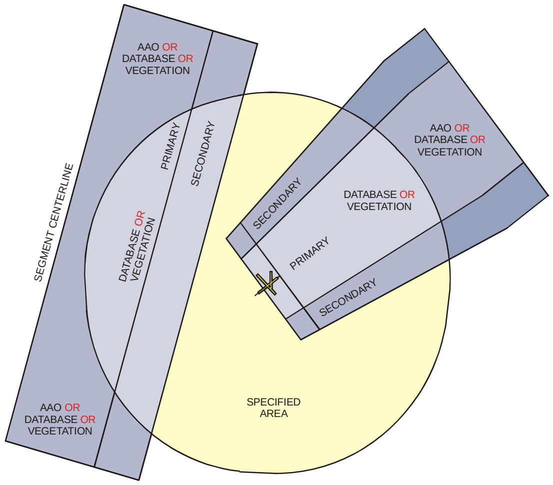
b. Level Surface Evaluations. For all segments except precision (PA) and APV final segments, and missed approach and departure 40:1 evaluations, determine the controlling obstacle as follows:

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

Note: As applied to paragraph 274, "database" is defined as obstacle data obtained from all available sources.

(2) Segment portions overlying the AAO exempt area [see figure 2-7E]:

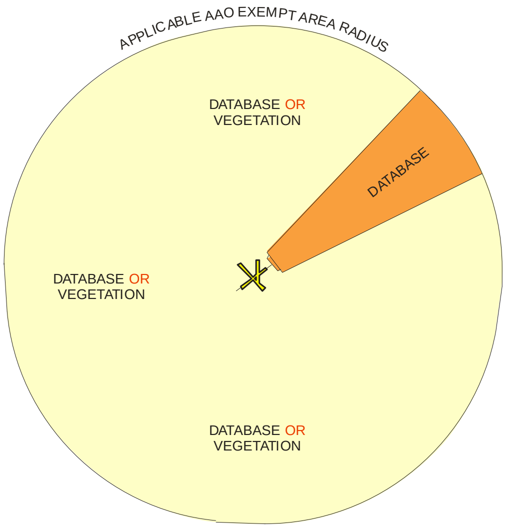
Figure 2-7E. Obstacle Identification.



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

Exception for runways supported by a FAA Spec. 405 **obstacle survey:** Use **only** the database for evaluation of obstacles located **within** the lateral confines of a precision approach trapezoid [see TERPS, Volume 3], aligned with the RCL. **Outside** the trapezoid, use the database and worst-case vegetation [see figure 2-7F].

Figure 2-7F. FAA Special 405 Survey Area.



(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 ft (or worst-case vegetation height if higher).

(4) The controlling obstacle is the highest of the obstacles identified under paragraph 274b(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 specified area:

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

Exception for runways supported by an FAA Special 405 **obstacle survey:** Use **only** the database for evaluation of obstacles located **within** the lateral confines of a precision approach trapezoid [see 8260.3B, Volume 3], aligned with the RCL. **Outside** the trapezoid, use the database and worst-case vegetation.

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

(a) Use the obstacle database and 200 ft 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 or transitional 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 for ILS CATs II or III (or any other procedure with waiver).

(c) For departure areas, the controlling obstacle is that obstacle which, having penetrated the 40:1 OCS causes the most adverse climb gradient and/or ceiling and visibility to be published.

d. When an existing procedure is affected by new application of the AAO standard, see paragraph 241a(8).

275. VERTICAL DATUMS.

Use the following guidance relating to vertical datums:

a. When using the NACO vertical obstruction file and airport surveys, in the CONUS, NGVD-29, and NAVD-88 are provided; however, use NAVD-88 for TERPS evaluation purposes.

b. Airport surveys, engineering drawings, and Airport Layout Plans must be updated by attrition as new surveys are provided. Since June 1999, all National Geodetic Service survey data have been provided in NAVD-88 for geographic areas where NAVD-88 is defined.

c. When developing WAAS/LAAS instrument procedures, determination of the landing threshold point (LTP) height above the ellipsoid (HAE) must be derived by adding the NAVD-88 threshold elevation value to its WGS-84 geoid height value. The LTP HAE will be reported on Form 8260-3/7, for procedures developed in the CONUS, ellipsoid height may be obtained from the AVNIS data sheet. See paragraph 857l(5).

276.-279. RESERVED.

SECTION 12. WAIVER OF STANDARDS

280. GENERAL.

Submit a request for a waiver of flight procedures standards on an approved computer generated Form 8260-1, *Flight Procedures Standards Waiver*, [see paragraph 830]. 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. The waiver 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.

Note: Those items identified in Order 8260.3B as "requires approval by Flight Standards Service" (e.g., GP angle above 3.00 degrees, climb gradient in excess of 500 ft/NM, etc.,) are not to be interpreted as a requirement for a waiver and do not require completion of a Form 8260-1. A request of this type is made in plain text by memorandum and submitted to AFS-420 for approval.

281. WAIVER PROCESSING.

Request waivers by completing the front of Form 8260-1. Detailed instructions for completing the form are contained in chapter 8, section 5. Figures 8-1 & 8-2 provide an easy reference for waiver form processing and routing requirements.

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

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. Enter only one waiver request on the waiver form.

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

e. 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 the NFPO.

Note: The CRM does not assess Category E aircraft.

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. The NFPO 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 to NFDC for publication.

282. 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.

283. PERIODIC REVIEW OF WAIVERS.

The NFPO must review approved waivers biennially to determine whether the waivers are still required. Cancel unnecessary waivers.

284. CANCELLATION OF WAIVERS.

a. Cancellation of waivers must include a reason in the comments block. Such termination may be directed by AFS-400. The NFPO 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 830].

285.-299. RESERVED.

CHAPTER 3. EN ROUTE PROCEDURES

SECTION 1. GENERAL

300. GENERAL.

a. The en route airspace structure of the National Airspace System consists of three strata. The first, or lower, stratum consists of conventional navigation (Victor) and RNAV (Tango) Air Traffic Service (ATS) routes that extend from the floor of controlled airspace up to but not including 18,000 ft mean sea level (MSL). The second stratum contains conventional navigation (Jet) and RNAV ("Q") ATS routes and extends from 18,000 ft 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 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.

301. 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 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 Part 95. The master lists of Part 95, COPs, direct routes, intersections, holding patterns, and off-airway routes (non-Part 95) are maintained by NFDC.

302.-309. RESERVED.

SECTION 2. CRITERIA APPLICATION AND DEVELOPMENT

310. 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.

311. 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 character-istics 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.

312.-319. RESERVED.

SECTION 3. ESTABLISHMENT OF EN ROUTE AIRSPACE

320. RELATIONSHIP OF COPs TO AIRSPACE 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 nautical miles (NM) from the facility, the location of the COP should be determined by the NFPO 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).

321. 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 ft within Class E airspace containing terminal instrument procedure segments (feeder, initial, intermediate, final, missed approach) and 500 ft within the low altitude airway structure. However, exceptions may be made which provide only 300 ft 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-ft increments: e.g., 1,049.99 ft becomes 1,000 ft and 1,050.00 ft becomes 1,100 ft. Refer to Order 7400.2, *Procedures for Handling Airspace Matters* (latest edition).

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

322.-329. RESERVED.

SECTION 4. SUBSTITUTE EN ROUTE FLIGHT PROCEDURES

330. 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. The NFPO, in coordination with ARTCCs, determines when the length of outages or other factors require publication of sub-routes.

c. AJW-3 provides flight inspection services, obstacle clearance verification, certification, and final approval of substitute routes.

331. FORMAT.

ARTCCs can use a format similar to that shown in figure 3-4 in preparing substitute routes for scheduled or unscheduled facility shutdowns, and for submission of the sub-route to the NFPO 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.

332. 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 210]. 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.

333. 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-Part 95) routes need not be in controlled airspace [see figures 3-1 and 3-2].

334. 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 3-3], map studies are required to identify controlling obstacles. NFPO 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.

335. PLANNING AND COORDINATION.

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

Figure 3-1. FAR Part 95 Sub-Route.

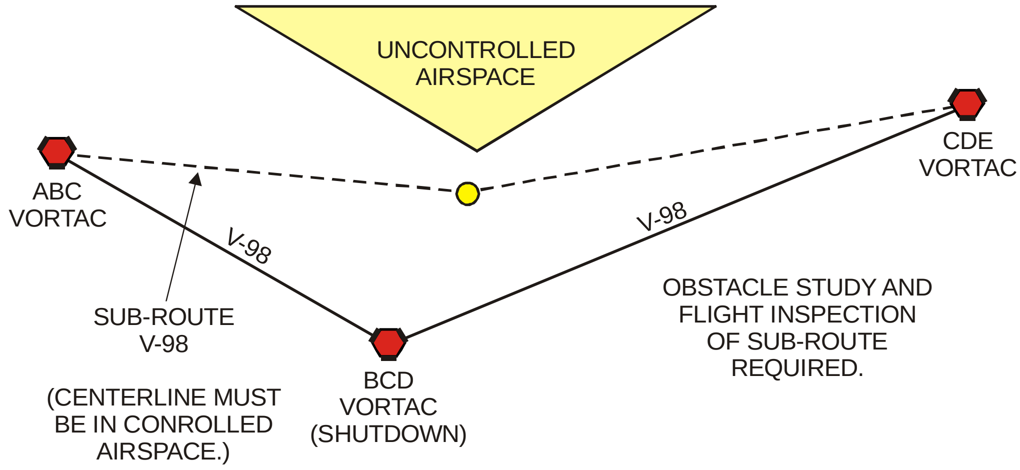


Figure 3-2. Non-Part 95 Sub-Route.

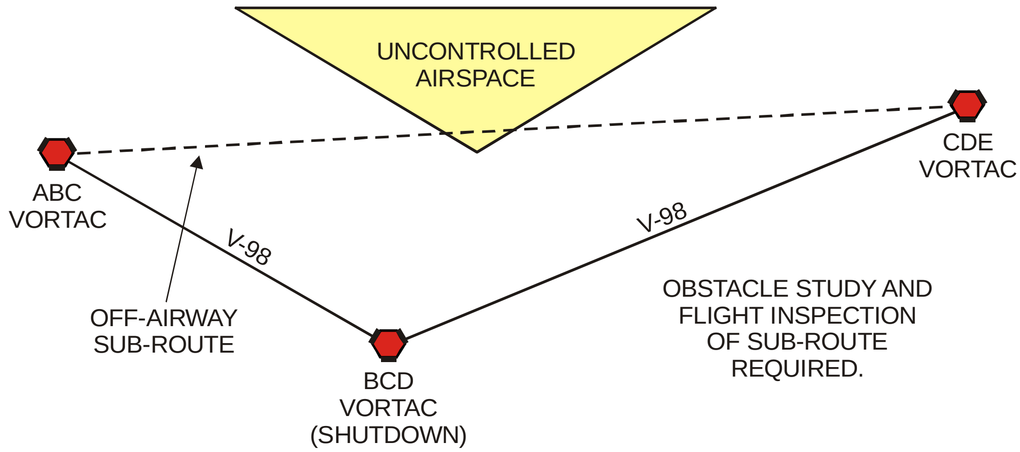
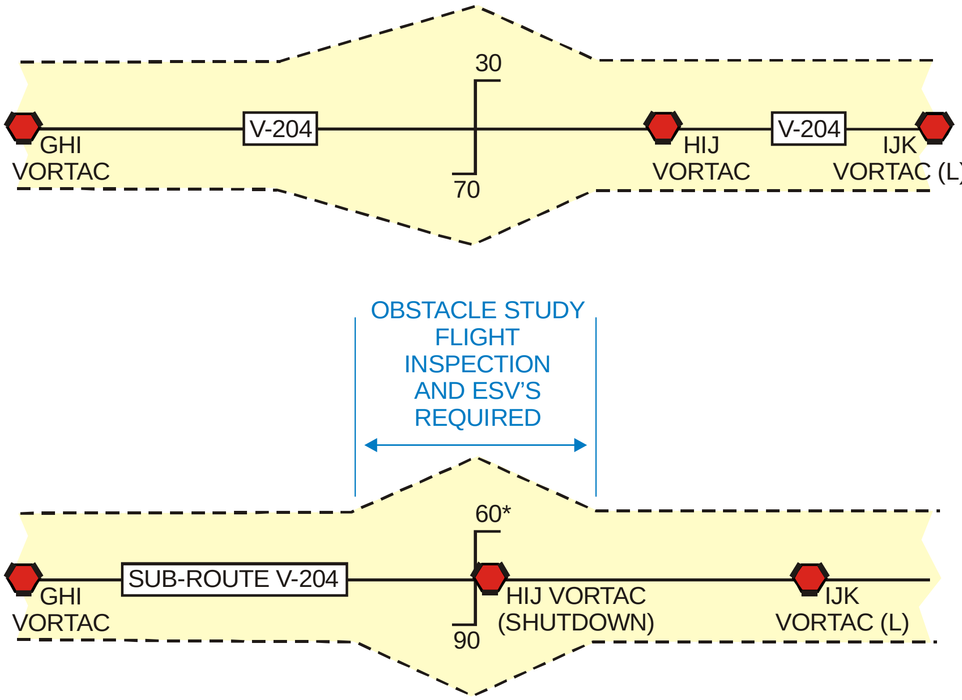


Figure 3-3. Sub-Route Wider than Existing Route.



*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. 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
National Flight Procedures Office, AJW-32

336. 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] that require the signature of the NFPO 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 338b].

(2) When the NFPO determines that publication is required for a scheduled or extended unscheduled outage, the NFPO forwards the ARTCC submitted substitute routes to NFDC for publication [see paragraph 338a].

337. PERIODIC REVIEW.

a. The ARTCC must review substitute en route flight procedures at least once every 4 years and any time that changes occur in the airway structure. The ARTCC must submit any required modifications to the NFPO for certification and approval.

b. NFPO.

(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.

338. DISTRIBUTION.

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

FSD	1 copy
NFDC	2 copies
ARTCC	1 copy
NFPO	Original

b. Non-Publication.

FSD	1 copy
ARTCC	1 copy
NFPO	Original

339. RESERVED.

SECTION 5. OFF-AIRWAY ROUTES

340. 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 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, the NFPO must coordinate with the Eastern, Central, or Western Service Areas. The applicable Air Traffic Service Area will process the route in accordance with Order 7400.2 to ascertain that there is no conflict in use of the airspace. Following AT coordination, the NFPO 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. NFPO 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.

341. 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.

342. OFF-AIRWAY DATA.

The NFPO should establish arrangements for obtaining and maintaining complete off-airway route information. The following is suggested:

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

b. The NFPO uses this information for development of flight inspection requirements and for maintaining current records.

343. PROCESSING DATA TO NFDC.

Use 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.

344.-349. RESERVED.

SECTION 6. NEW OR REVISED NATIONAL AIRSPACE SYSTEM ROUTES

350. DEFINITION.

Route. For the purpose of this section, a route includes all charted en route depictions requiring Part 71 airspace action and/or Part 95 procedural data application.

351. COORDINATION PROCEDURES.

a. The applicable Air Traffic Service Area provides the NFPO 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 the NFPO to request flight inspection and to coordinate the planned effective date.

b. NFPO Action. The NFPO 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.

352. PUBLICATION OF PROCEDURAL DATA.

a. The NFPO 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 Part 71; and the NFPO is responsible for developing the related procedural data published in Part 95.

353.-359. RESERVED.

SECTION 7. MINIMUM VECTORING ALTITUDE (MVA) AND MINIMUM IFR ALTITUDE (MIA) CHARTS

360. 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 chart design based on topography, obstruction data, and operational requirements in accordance with instructions contained in Orders 7210.3, Facility Operations and Administration, 7210.37, En Route Minimum IFR Altitude (MIA) Sector Charts and Notice N 8260.64, Radar Approaches and Minimum Vectoring Altitudes - Current Guidance and Criteria. NFPO personnel may be requested to participate in original chart development at the option of the ATC facility.

NOTE: Notice N 8260.64 will be incorporated into Order 8260.3, U.S. Standard for Terminal Instrument Procedures (TERPS).

361. AREAS OF CONSIDERATION.

The area considered for obstacle clearance must be the maximum displayable range of the radar system for MVA charts. MIA charts must accommodate the facility's delegated area of control as well as adjacent areas where control responsibility is assumed because of early handoff or track initiation. Both MVA and MIA charts may be subdivided into sectors to gain relief from obstacles that are clear of the area in which flight is to be conducted. There is no prescribed limit on the size, shape, or orientation of the sectors; however, they must be designed with consideration to aircraft maneuvering ability, obstacle clearance requirements, and air traffic flow requirements. MVA charts should be designed to emphasize simplicity and safety in radar traffic control applications. Examples of Terminal MVACs can be seen in NOTICE N 8260.64, paragraph 10.5.

362. OBSTACLE CLEARANCE.

Obstacle clearance must be provided over all obstacles within the MVA/MIA sectors and associated three/five NM lateral buffer areas irrespective of the radar coverage determined by flight inspection.

a. Ensure an allowance has been included in all terrain values to assure clearance over natural vegetation. A mean maximum height of vegetation may be obtained through the National Forestry Service

b. Ensure a 200 ft adverse assumption obstacle (AAO) additive has been included in all terrain values used in both MIA and MVA charts to assure clearance over man-made obstructions. The AAO additive need not be considered in the exempt areas specified in paragraph 274.

c. MVAs must not be below the floor of controlled airspace and should provide at least a 300-ft buffer above the floor of controlled airspace. MIAs **must** provide a 300-ft buffer above the floor of controlled airspace. An MVA/MIA may also be established to support operations in uncontrolled airspace. When this is done, both altitudes must be specified on the chart. Current Sectional Charts (computer generated color copies are acceptable) or an approved airspace data file must be used to determine the floor of controlled airspace.

NOTE: Controlled airspace considerations are the responsibility of ATC facilities. The NFPO review must assure that both obstacle clearance and controlled airspace requirements are met for MVAs and MIAs. MVAs and MIAs do not require flight inspection; it is the responsibility of the controller to determine that a target return is adequate for radar control purposes.

d. Resultant altitudes from both required obstacle clearance (ROC) and airspace applications may be rounded to the nearest 100-ft increment; <u>however, the</u>

rounding process must ensure that the minimum ROC requirements remain intact. For example, 1,149.99 ft becomes 1,100 ft, and 1,150.00 ft becomes 1,200 ft.

NOTE: Existing obstructions, where less than minimum ROC has been applied due to the past practice of rounding altitudes to the nearest 100-ft increment to achieve a cardinal or 500-ft MVA sector altitude may be retained. New obstructions must adhere to obstacle clearance standards. For example, an MIA area in the non-mountainous region is controlled by a 1,149 ft obstruction. If this is a new obstruction, the resulting sector altitude cannot be rounded to 2,100 ft, because that gives less than the required 1,000 ft obstacle clearance. If this is an existing obstruction where rounding has been applied in the past, rounding down may be continued.

363. OBSTACLE CLEARANCE REDUCTION.

ROC may be reduced within designated mountainous areas **only** where lower altitudes are required to achieve compatibility with terminal routes, to permit vectoring to an instrument approach procedure, or to maintain a cardinal altitude to enhance operations. ROC reductions are not authorized in areas characterized by precipitous terrain. The NFPO may approve reductions to the minimum altitude in accordance with the following:

a. ASR – 1,000 ft of obstacle clearance may be authorized in accordance with NOTICE N 8260.64, Paragraph 10.5.5a.

b. ARSR - Reductions to not less than 1,700 or 1,500 ft of terrain clearance may be authorized with appropriate obstacle clearance in accordance with FAA Order 8260.3B, Paragraph 1720b(1).

c. ARSR – Reductions to not less than 1,000 ft of clearance over man-made obstructions may be authorized in accordance with en route criteria contained in FAA Order 8260.3B, Paragraph 1720b(2).

NOTE: When reducing ROC, both sub-paragraphs b and c are applied and the higher result determines the MVA/MIA.

d. When approving altitudes with less than 2,000 ft of obstacle clearance in designated mountainous areas, a record of such approval, including the rationale for the need, must be maintained by the NFPO.

364. CHART REVIEW AND APPROVAL.

a. Civil Vectoring Charts.

(1) ATC Action. The ATC facility forwards a MVA/MIA chart package, consisting of two MVA/MIA charts, drawn directly on current sectional charts (Computer generated color copies are acceptable; see Order 7210.3, Chapter 3, section 9) and two Forms 7210-9, Minimum IFR Altitude/ Minimum Vectoring Altitude Obstruction Documentation, to the NFPO for review and approval. Alternatively, an approved/certified automation tool may be used to develop and submit the package. The ATC facility updates, as required, and/or reviews the MVA/MIA chart annually to ensure accuracy, and jointly approves any amendment or review with the NFPO.

(2) NFPO Action. Review MVA/MIA chart packages (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 NFPO manager, or his/her designated representative, on the Form 7210-9, and return it to the ATC facility. Retain one copy of the MVA chart or the MIA chart, and Form 7210-9.

b. Military MVA Charts. The FAA has no responsibility for the technical review of military MVA charts, with the exception of U.S. 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.

365. 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 7210.3 specifies EOVM design, preparation, production, and verification requirements.

b. FPO/NFPO Review. Limit review of EOVMs provided by the AT facility 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 ft additive has been included in all terrain values to assure clearance over natural vegetation and unreported man-made obstructions.

366.-399. RESERVED.

CHAPTER 4. TERMINAL PROCEDURES

SECTION 1. GENERAL

400. 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 U. S. flag carriers at foreign airports.

401. 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 872].

402. 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 7400.2, *Procedures for Handling Airspace Matters*.

b. Where an airport does not qualify for a Class B/C/D/E surface area, designate Class E 700-ft airspace. In the latter case, landing minimums may be established below the floor of controlled airspace. 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. 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*, paragraph 7d(2)]:

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

(2) The procedure turn 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.

c. Special procedures other than those noted in paragraph 402a, should, where possible, be contained within controlled airspace in accordance with Order 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.

403. 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 708 for procedures for the first time approval of a non-Federal NAVAID.

404. 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 TERPS criteria. The paragraph numbers refer to identically numbered paragraphs in Order 8260.3.

a. RESERVED.

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

c. 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 Part 77 surfaces. Exception: See Order 8260.3, Volume 1, paragraph 251b(2)(c). Objects that penetrate these surfaces are normally studied by the National Flight Procedures Office (NFPO) prior to construction or alteration. The NFPO recommendations for marking, lighting, or removal are made at that time.

d. Volume 1, paragraph 151, Coordination Conflicts. The NFPO 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 the region, must be forwarded to the Flight Procedure Standards Branch, AFS-420, with an information copy to the commenting agency.

e. Volume 1, paragraph 160, Identification of Procedures.

(1) When developing procedures at a location that requires the use of the “Z” and “Y” naming convention, the procedure with the lowest minimums will be identified with the “Z.” The next lowest will be “Y,” etc.

(2) Military operators have stated a requirement for tactical area navigational aid (TACAN) instrument approach capability to a limited number of airports. These airports have a prescribed very high frequency omni-directional radar range (VOR) procedure, based on a VOR collocated with tactical area navigational (VORTAC) facility, where TACAN-equipped aircraft are expected to operate. 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 TERPS 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.

f. Volume 1, paragraph 161, Straight-in Procedure Identification. 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

g. Volume 1, paragraph 162, Circling 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**

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

i. 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 805g(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.

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

k. Volume 1, paragraph 240, Intermediate Approach Segment. An intermediate segment must be developed and depicted on all graphically published instrument approach procedures. In determining intermediate altitudes and intermediate fix locations, consideration must be given to Air Traffic requirements and the establishment of an approximate 3-degree descent for the nonprecision final approach segment.

l. 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.

m. Volume 1, paragraph 250, Final Approach Segment. For nonprecision approaches, the final approach segment area considered for obstacle clearance begins at the FAF and ends at the runway or missed approach point, whichever is encountered last. This concept applies to Order 8260.3, Volume 1, paragraphs 513, 523, 713, 903, and 1044. For precision approaches, the area considered for obstacle clearance begins at the precise final approach fix (PFAF) (i.e., glide slope intercept point) and ends at a point 200 ft outward from the threshold [see Order 8260.3, Volume 3].

n. Volume 1, paragraph 261, Circling Approach Area not Considered for Obstacle Clearance. Sectorize the circling area only to deny circling within a prescribed area.

o. Volume 1, paragraph 270, Missed Approach Segment. The missed approach altitude must not be less than the highest minimum descent altitude (MDA), including adjustments.

p. 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.

q. Volume 1, paragraphs 275, 277b, 1033, and 1035b, Turning Missed Approach/Turning Area.

(1) 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 the lowest and highest aircraft categories 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. Where obstacle penetrations exist, evaluate the appropriate area for each category to determine specific aircraft category impact.

(2) Section 2 boundary terminates at point B (or point C for ILS or PAR) **only** if a fix exists at the end of section 1 **and** if course guidance is provided in section 2.

r. 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.

s. Volume 1, paragraph 311. When Category (CAT) E minimums are required on civil procedures, use Order 8260.3, Volume 1, chapter 3, table 10 to establish visibility minimums. CAT E minimums must not be less than that required by Order 8260.3, Volume 1, chapter 3, table 9.

t. Volume 1, paragraph 323b, Remote Altimeter Setting Source. Whether the use of a remote altimeter setting is primary or full-time, or secondary to a local source, establish the required visibility as stated in Order 8260.3, Volume 1, chapter 3.

u. RESERVED.

v. Volume 1, paragraph 333, Runway Visual Range (RVR). RVR must be authorized on adjacent runways, when segments of those runways are located within a 2,000-ft radius of the transmissometer location and the requirements of Order 8260.3, Volume 1, paragraph 334, are met.

(1) RVR must be authorized in accordance with the following. See Order 6560.10, Runway Visual Range (RVR):

(a) CAT II/III Rollout RVR. Threshold plus 2,000 ft of runway required within the 2,000-ft circle.

(b) CAT I ILS and Nonprecision Touchdown RVR. Threshold plus 1,200 ft of runway required within the 2,000-ft circle.

(c) Mid-field RVR. Two thousand feet coverage of runway centerline including the runway midpoint required within the 2,000-ft circle.

(2) When a transmissometer serves more than one runway and a CAT II/III runway is involved, the touchdown RVR will be sited with respect to the CAT II/III runway. RVR installations meeting requirements for use on adjacent runways may be used for reducing standard take-off visibility.

(3) The NFPO 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.

(4) The NFPO must revise affected procedures by the normal abbreviated or full amendment process.

w. Volume 1, paragraph 334, Runway Requirements for Approval of RVR. 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, the NFPO should advise the airport sponsor of the proposed course of action. Where corrective action cannot be accomplished within a reasonable length of time, the NFPO must submit a revised procedure reflecting the adjustment to landing minimums.

x. Volume 1, paragraph 343, Visibility Reduction*.* The runway alignment indicator light (RAIL) portion of a minimum 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 retain visibility reductions authorized in Order 8260.3 table 9. 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.

y. Volume 1, paragraph 360, Standard Alternate Minimums. Do not authorize alternate minimums when the facility providing final approach guidance is a CAT 3 monitored facility. If a procedure has a stepdown fix predicated on a CAT 3 monitored facility, establish alternate minimums no lower than the minimum altitude without the fix [see paragraphs 213c(1) and (2)]. Standard alternate minimums provide a margin of safety over basic straight-in landing minimums. Where higher than basic landing minimums are required, consider an equivalent increase for the alternate minimums, particularly at remote airport locations. Similar consideration should be given when establishing alternate minimums at airports served by a single instrument approach, which authorizes circling minimums only.

z. 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°). It is not a requirement for the final approach course to pass through a portion of the landing surface.

aa. 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.

bb. 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 3,000-ft 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 ft wide. See Order 8200.1, *United States Standard Flight Inspection Manual*, paragraph 15.20f(3)(c).

cc. 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*.

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

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

ff. 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.

405. 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 1,200 ft or less.

b. Only one final approach course is published

c. Course guidance is provided on the runway centerline or within 3 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. Final approach areas must be established for both runways and must be determined by the approach guidance provided. Both final approach areas must be used to determine the MDA to the sidestep runway.

f. Utilize the same nonprecision obstacle clearance used for the primary runway to determine the published MDA for the sidestep maneuver.

g. Establish published visibility in accordance with Order 8260.3, Volume 1, chapter 3, table 6 or 11, whichever is higher.

(1) One-half mile visibility reduction is authorized if approach light system (ALS), MALSR, or SSALR is installed to the sidestep runway. The minimum visibility after applying credit for lights must be no less than 1 mile.

(2) Visibility must be increased ¼ mile when the "sidestep" runway threshold is over 1,000 ft closer to the FAF than the runway with course guidance.

Note: If descent gradient is exceeded, the sidestep maneuver must NOT be authorized.

h. 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

406. 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 TERPS criteria. If used at night or in instrument flight rules (IFR) conditions, runway lighting must include threshold lighting for the displaced threshold.

b. Approach lights will not be usable for taking a reduction in visibility minimums. Re-compute no-light minima, adding the amount of displacement to the “MAP-to-threshold” distance.

c. Suspend vertically guided approach operations by NOTAM. This includes area navigation (RNAV) procedures that contain lateral precision 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/ microwave landing system (ILS/MLS) 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 table 2. 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 Flight Standards Division All Weather Operations Program Manager (RFSD-AWOPM) 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, touchdown zone, and airport will more than likely change. In this case, evaluate the revised HAT/HAA for visibility impact and NOTAM changes accordingly. The new temporary HAT/HAA/THLD/field elevation values must be NOTAMed only when necessary for safety of flight.

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

407.-419. RESERVED.

SECTION 2. STANDARD INSTRUMENT APPROACH PROCEDURES (SIAP)

420. GENERAL.

SIAPs must be established in accordance with Order 8260.3, other specific FAA 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.

421. COORDINATION OF TERMINAL INSTRUMENT PROCEDURES.

Coordination requirements for terminal instrument procedures are set forth in Order 8260.3, Volume 1, chapter 1, section 5 [see paragraph 811d].

422. RADAR INSTRUMENT APPROACH PROCEDURES.

Air Traffic Control (ATC) personnel determine which runways require radar instrument approach procedures and coordinate these requirements through the NFPO.

423.-429. RESERVED.

SECTION 3. VISUAL DESCENT POINT (VDP)

430. ESTABLISHMENT. The VDP defines a point on a straight-in, nonprecision approach, where a normal descent from the MDA would commence if the required visual references were acquired.

a. Establish a VDP provided the SIAP meets the requirements of Order 8260.3, Volume 1, paragraphs 251, 252, and 253. This provision includes a localizer procedure when combined on an ILS chart and a LNAV procedure when combined with LNAV/VNAV and/or LPV.

b. For chart clarity, a VDP should be no less than 1 mile (OPTIMUM) 0.5 miles (MINIMUM) from a final segment fix or MAP. If proximity closer than 0.5 miles is required, consider one of the following actions:

(1) Do NOT establish a VDP.

(2) Relocate the fix to the VDP location, and do NOT establish a VDP.

(3) Relocate the fix to accommodate the 0.5 mile (or greater) requirement.

Note: Option (2) above increases MDA and descent angle. Option (3) increases S/D altitude.

c. Do NOT adjust visibility minimums to accommodate a VDP.

d. Where used, the DME source must be the same as the DME source for DME fixes in the final segment.

431. MULTIPLE ALTIMETER SOURCES. If the MDA can be based on more than one altimeter source and the resulting MDAs are different, then the published VDP is not valid when the alternate source is used. A note must be published to NA the VDP when the alternative altimeter source is used. See paragraph 855e(9).

432. FAA FORM 8260-9 ENTRIES. To facilitate review, entries may be required in the REMARKS section. Where a VDP is not established, give the reason; e.g., obstacles penetrate VDP surface, descent gradient, proximity to final approach segment (FAS) fix, etc. [see paragraphs 857r and 860c].

433.-439. RESERVED.

SECTION 4. SPECIAL INSTRUMENT PROCEDURES PROCESSING

440. INITIATING A REQUEST FOR SPECIAL INSTRUMENT PROCEDURES. Proponents will initiate Special instrument procedure requests using the Internet Web site http://avn.faa.gov/index.asp?xml=ifp/ifpform. Proponents having already developed instrument procedures must submit them through their principal operations inspector (POI) or Aviation Safety Inspector (ASI) prior to submitting the package to the applicable RFSD-AWOPM for approval and submission to the Regional Airspace and Procedures Team (RAPT) for action. See figure 4-1 for procedure processing flow diagram and paragraph 442 for procedure package content requirements.

Note 1: Responsibilities of the RAPT are identified in the latest edition of Order 8260.43, Flight Procedures Management Program.

Note 2: See Order 8260.31, for processing Special Foreign Terminal Instrument Procedures (FTIPs).

441. PROCESSING REQUESTS.

a. Flight Standards District Office (FSDO)/Certificate Management Office (CMO)/Operator Action.

(1) Participate in RAPT meetings as an FAA participant at the request of the RFSD-AWOPM, and RAPT chairman.

(2) Perform a preliminary assessment, based on the proponent's package content, as to the operational acceptability of the proposed procedure for further action, and make recommendations to the RAPT through the RFSD-AWOPM.

(3) Forward the proponent's package, along with any recommendations to the RFSD-AWOPM.

(4) Validate the operator's documentation (when required) for requirements or limitations listed on the Form 8260-10, or for any special or unique normal, abnormal or emergency procedures needed to accommodate any unique, local operating environmental concerns as required by the issuing RFSD-AWOPM.

(5) With RFSD-AWOPM approval, issue the approved procedure under Order 8400.10, *Air Transportation Operations Inspector's Handbook*, Volume 4, chapter 2, section 9. If additional users will be authorized, the applicable POIs and RFSD-AWOPMs must be notified.

(6) Forward a copy of the proponent's approved charted procedure to AFS-420, the NFPO, the originating RFSD-AWOPM, and the controlling ATC facility.

(7) When a Special procedure is not maintained by the FAA [see paragraph 442a], it is the proponent/operator's responsibility to notify the FAA (POI or RFSD-AWOPM) if procedure maintenance responsibilities can no longer be met. The procedure must be suspended until such time maintenance has been restored and the procedure has been re-evaluated to ensure currency. If maintenance cannot be restored within 60 days, the procedure must be canceled [see paragraph 444].

(8) Obtain approval to use the procedure from the issuing RFSD-AWOPM before authorizing any additional aircraft type (by Type design) and/or any aircraft that has modified its avionics package.

b. RFSD-AWOPM Action.

(1) Participate as CORE RAPT member.

(2) Complete the "Special Procedure Checklist" [See figure 4-2] prior to submitting the procedure to the Flight Procedures Field Office (FPFO). Ensure that the "priority number" assigned by the RAPT has been placed in the applicable block.

Note: The RSFD-AWOPM may provide the checklist to the proponent/developer to have them ensure all the items have been completed prior to submission.

(3) When Special procedures are received, that were developed by the proponent/contractor, ensure all applicable coordination with the Air Traffic Organization and/or FSDO has been completed in accordance with RAPT procedures.

(4) Participate as a member of the AFS-400 procedures review board (PRB) to assist in the development of FAA Form 8260-10. Recommend to AFS-410/470, when an operator should meet specific normal, abnormal, or emergency operational requirements relative to any unique, local environmental conditions prior to issuance of a Special instrument approach procedure (IAP) by the POI; e.g., proof of one engine inoperative capability, etc.

(5) Provide oversight for issuance of all Special procedures within the region.

(6) Authorize issuance of approved Special procedures to additional requesters through the Flight Standards District Office (FSDO)/Certificate Management Office (CMO).

Note: Obtain AFS-400 pre-authorization for specifically identified procedures prior to issuance to additional operators.

Provide copy of enabling correspondence to AFS-460, including charted procedure. (Specifically identified procedures are those for which AFS-400 has developed aircraft equipment and performance requirements, and/or specific operations including dispatch and pilot training requirements.)

(7) Coordinate with POI concerning the operator meeting specific normal, abnormal, or emergency operational requirements in the operators' operations manual and training program relative to any unique, local environmental conditions prior to authorizing POI's issuance of a Special IAP; e.g., proof of one engine inoperative capability for missed approach (MA), etc. Authorization may be via e-mail or memorandum. The RFSD-AWOPM must maintain a copy of the proof of operator's capability relative to the Special IAP and e-mail/ memorandum authorizing the POI issuance to the operator.

(8) Maintain a list by location, procedure, and operator(s), of all Special procedures issued within the jurisdiction of the region and provide that information to AFS-400 upon request.

(9) Distribute the approved procedure as noted in paragraph 445. (Distribution to ALPA and APA applies for air carrier Specials.)

(10) When a proponent sells/ transfers procedure responsibility to a new owner/operator, the procedure must be canceled and reissued to the new proponent. All user agreements must then be re-negotiated.

(11) The AWO has the authority to rescind the issuing authorization from the POI if the operator deviates from the "Operations and Training Requirements" for the procedure or when the RFSD-AWOPM becomes aware of any additional operational and/or training require-ments.

c. National Flight Procedures Office (NFPO) Action.

(1) The Western, Central, or Eastern Service Area FPFO serves as RAPT Chairperson. The FPFO must ensure the "Special Procedure Checklist" (figure 4-2) has been completed prior to submission to the NFPO for development and/or quality assurance (QA) review or prior to submitting a proponent/ contractor developed procedures for QA and Flight Check. If the checklist is not complete, return the package to the RFSD-AWOPM for action.

(2) Coordinate reimbursable agreements as appropriate.

(3) Forward requests for procedures not covered by current criteria to AFS-460 for criteria development and processing.

(4) Develop waiver request in coordination with the proponent and the FSD/FSDO/CMO and forward to AFS-460 for further action. Provide flight inspection report (on request).

(5) Develop the Special procedure with current, waived, or new criteria as appropriate.

(6) Perform quality assurance review of Special procedures developed by the proponent, or internally within the NFPO.

(7) Coordinate flight inspection of the procedures.

(8) Forward completed procedure package to AFS-460 for approval coordination. The procedure checklist [figure 4-2] must be submitted as part of the completed package [see paragraph 442 for package content]. When forwarding packages that contain revisions to existing procedures, the cover letter must include a paragraph describing all changes made. When forwarding a new procedure, the cover letter must state the reason/justification that the procedure needs to be a Special and include the date that the initial request was made by the proponent.

(9) Maintain a file of appropriate correspondence for each Special procedure.

(10) Perform, as necessary and appropriate, biennial review, environmental assessment, obstacle evaluation (OE), routine maintenance, and NOTAM action to ensure the safety, currency, and validity of the procedure(s) for which they have jurisdiction.

Note: These functions may be performed by a commercial service specified in the Special procedures checklist [see figure 4-2].

(11) Document for permanent file on a separate Form 8260-10, the Office of Primary Interest (OPI) - including non-Governmental proponents/developers regarding responsibility for actions in paragraph 441c(10), with a brief explanation of the process for accomplishment of each action item.

d. Flight Technologies and Procedures Division (AFS-400) Action.

(1) Participate as a NAPT member.

(2) Provide signature-approving authority for all Special procedures.

(3) Approve development of standards and criteria to support requests for Special procedures where no criteria exist.

(4) Provide signature-approving authority for all waivers required for Special procedures.

e. AFS-200/800 Action.

(1) Participate in PRB as deemed necessary.

(2) Assist AFS-410/470 in evaluating procedure packages from an operational standpoint to determine actions required where special training or aircraft equipment and/or performance may exist.

(3) Include in the operation evaluation of the procedure package flyability, regulatory compliance, complexity, specific crew qualifications, equipment and/or demonstrated performance requirements, recommendations for training, or other special operating requirements or considerations deemed necessary to execute the procedure.

f. Flight Operations Branch (AFS-410) and/or Performance Based Flight Systems Branch (AFS-470) Action.

(1) Conduct detailed technical procedural evaluation, as required, using aircraft and/or flight simulator evaluation, risk modeling, and Airspace Simulation and Analysis for TERPS (ASAT).

*Note: Per paragraph 201b in Volume 1 of Order 8260.3, **ALL** criteria are predicated on normal aircraft operations for considering obstacle clearance requirements. Normal aircraft operation means all aircraft systems are functioning normally, all required navigational aids are performing within flight inspection parameters, and the pilot is conducting instrument operations utilizing instrument procedures based on the TERPS standard to provide ROC.*

(2) With AFS-460 and RFSD-AWOPM, develop and enter special authorization determination (including that no action is required) on Form 8260-10 and permanently attach to original package of all

Special IAPs and waivers prior to approval signature.

(3) Special procedures based on STANDARD published criteria.

(a) Participate as a member of the Division PRB.

(4) Special procedures requiring WAIVER of standard criteria or development of NEW CRITERIA.

(a) Participate as a member of the Division PRB.

(b) Evaluate waivers of CAT II/III published criteria.

(c) Develop Flight Standards Information Bulletins as required.

(d) Develop special authorization requirements with AFS-200/800, RFSD-AWOPM, FSD/FSDO, and AFS-400 branches, where special training or aircraft equipment and/or performance requirements may exist.

(e) Enter special authorization determination (including that no action is required) on Form 8260-10 and **permanently attach** to original package prior to approval signature.

g. Flight Procedure Implementation and Oversight Branch (AFS-460) Action.

(1) Special procedures based on STANDARD published criteria.

(a) Determine necessity for Division PRB reviews.

(b) Provide a copy of procedures subject to PRB review to AFS-200, AFS-410/470, and RFSD-AWOPM prior to a PRB meeting.

(c) Facilitate the Division PRB.

(d) Coordinate AFS-400 signature/approval of procedure.

(e) Maintain a record of all approved Special procedures.

(f) Distribute the approved procedure as noted in paragraph 445.

(2) Special procedures requiring WAIVER of standard criteria:

(a) Provide a copy of procedures subject to PRB review to AFS-200, AFS-410/470, and RFSD-AWOPM prior to the PRB meeting.

(b) Facilitate the Division PRB.

(c) Coordinate with the appropriate RFSD-AWOPM to validate the assessed equivalent level of safety and/or participation on the Division PRB.

(d) Evaluate the scope and validity of the waiver request.

(e) Review the waiver request for adequate documentation.

(f) Evaluate waiver "**Equivalent Level of Safety**" to determine if alternatives to criteria meet or exceed the level of safety provided by standard criteria.

(g) Assist AFS-440 as required when a detailed technical procedure evaluation or analysis is required, using aircraft and/or flight simulator evaluation, risk modeling, and ASAT.

(h) Assist AFS-410/470, as requested, in evaluating procedure packages where special training or aircraft equipment and/or performance requirements may exist, providing interpretation of design criteria as relates to waiver requirements.

(i) Enter "**Special Authorization Required**" in AFS-400 endorsement block on original Form 8260-1 (if required).

(j) Enter "**Proponent's approval for use of this procedure which requires compliance with the memorandum issued to the POI by the RFSD-AWOPM**" in the "Air Carrier Notes" block on the back of the Form 8260-7.

(k) Coordinate AFS-400 approval/signature of the waiver package.

(l) Distribute the approved procedure as noted in paragraph 445.

(3) Special procedures requiring development of NEW CRITERIA.

(a) Develop procedural design standards for criteria based on operational and equipment requirements.

(b) Draft criteria from standards provided from within AFS.

(c) Facilitate Division PRB evaluation and coordination of new criteria.

(d) Coordinate with the RFSD-AWOPM regarding implementation of new Special procedure criteria to assess the Air Traffic Organization or Airport issues.

(e) Process criteria for AFS-1 or AFS-400 signature, as appropriate, and distribute to the NFPO for use in design/ re-design of proposed procedure.

(f) Facilitate Division PRB to evaluate the final procedure.

(g) Assist in evaluating the procedure packages where special training or aircraft equipment and/or performance requirements may exist.

(h) Enter "**Special Authorization Required**" in AFS-400 endorsement block on original Form 8260-1 (if required).

(i) Include a copy of new criteria in procedure package and copy of the AFS-400 approval to use.

(j) Coordinate AFS-400 approval/signature of the procedure.

(k) Distribute the approved procedure as noted in paragraph 445.

442. PROCEDURE PACKAGE CONTENT.

a. Special instrument procedures may be developed by the proponent/operator (PO) or an agent hired by the PO. In addition to the completion of applicable 8260-series forms, certain levels of coordination, maintenance, protection, and periodic review are required. The PO is responsible for providing to the RAPT the following actions and plans for the procedure:

(1) Obstruction Evaluation (OE) Study Plan. A plan in place to accommodate OE proposals. An assessment for aeronautical effect on the Special instrument procedure will be conducted and appropriate action taken as necessary.

Note: If public procedures exist at the same airport and an OE plan is in existence, a memorandum from the applicable FPFO must accompany the package stating that the Special procedure will be included in the OE process.

(2) NOTAM Plan. The Flight Data Control (FDC) NOTAM system is used to disseminate NOTAMs on Special procedures when all system requirements (e.g., location identifier assigned and in the NOTAM database, etc.) are in place. Locations that are not in the NOTAM database are incapable of FDC NOTAM service and a plan must be established and in place for notification of, and compliance with, safety of flight changes to procedure courses, fixes, altitudes, or minimums that are necessary.

(3) Periodic Review Plan. A plan is in place for the periodic review and amendment process of the procedure as required by this order, chapter 2, section 8. The plan must identify who will be responsible for routine procedure maintenance, and completing/ documenting the periodic (biennial) review.

(4) Flight Inspection Plan. A plan is in place so that after the initial flight inspection of the procedure has been completed, periodic flight inspections are accomplished as specified in Order 8200.1, chapter 4, section 2.

(5) Environmental Plan. All environmental studies must be conducted and an appropriate checklist completed in accordance with Order 1050.5E, *Environmental Impacts: Policies and Procedures*.

(6) Air Traffic and Airspace. Appropriate documentation indicating coordination was affected with the parent Air Traffic control facility to ensure acceptance of the developed procedure and appropriate airspace requirements have been met in accordance with this order, chapter 5, section 2.

(7) Airport/Heliport Acceptance. Appropriate documentation indicating airport/heliport management acceptance of the Special instrument procedure.

(8) POI or FSDO. Name**,** office routing, and phone numbers of POI or appropriate FSDO inspector.

(9) User(s). Identify user(s) of the procedure, to include points of contact.

Note: If the proponent/operator later decides to authorize additional users, the POI and RFSD-AWOPM must be notified.

(10) Plans (1) through (5) may be omitted from submitted packages as agreed to and individually specified in a memorandum submitted to and approved by AFS-460.

Note: Memorandum submitted requesting permission to omit these plans must contain justification to do so.

(11) Provide a graphic portrayal of the procedure.

b. All Special procedure packages submitted for AFS approval must contain the following: applicable 8260-series forms, maps graphically depicting obstacles in relation to obstacle evaluation areas (OEAs), and graphic depiction of the procedure.

Note: Additionally, see Order 8200.1, section 214, for additional flight inspection require-ments.

c. Special procedures packages must include a copy of the Special Procedure Checklist [see figure 4-2].

d. A package without the required information listed above will be returned to the submitter without action.

443. MINOR REVISIONS OF SPECIAL PRO-CEDURES.

Minor changes to Special IAPs may be made by processing an abbreviated Form 8260-7 amendment. For those Special procedures at locations that are in the U.S. NOTAM system, a T-NOTAM must be used to initiate the change and followed up with an abbreviated Form 8260-7 amendment. For those Special procedures at locations <u>not</u> in the U.S. NOTAM system, notify the users (as described in the NOTAM plan for the procedure) of the applicable changes and process an abbreviated Form 8260-7 amendment. When processing an abbreviated Form 8260-7, apply the following:

a. Increment the amendment number using an alphanumeric format; e.g., AMDT 3B.

b. Complete the "**Notes Continued**" **block** on the reverse side of the form indicating the changes described in the T-NOTAM. Include cancellation instructions for the T-NOTAM. Be specific in indicating the changes, e.g., MDA changed from 820 to 880 ft, and the reason, e.g., "New obstacle found in final segment."

c. Submit to AFS-460 for processing. AFS-460 will determine what coordination/ review action is necessary based on the nature of the change(s).

444. CANCELLATION OF SPECIAL PRO-CEDURES.

a. The RFSD-AWOPM notifies the NFPO (or commercial organization that is maintaining the procedure) that the procedure is no longer required (include the reason for cancellation) and should be canceled [see para-graph 4.4.1a(7)].

b. NFPO (or commercial organization that is maintaining the procedure) prepares an original Form 8260-7 per paragraph 812, completing only the type of procedure and the City, State line, entering the required notation on the front of the form, leaving the "effective date" blank. Additionally, on the front of the form in the "Notes" section, state the reason for cancellation. The form is then sent to AFS-460 for processing and distribution.

c. AFS-460 processes the cancellation and forwards to AFS-400 for signature. Signed Form 8260-7 (original) is returned to AFS-420 for filing. A copy will be forwarded to the applicable RFSD-AWOPM.

445. DISTRIBUTION. Responsible offices distribute forms as follows:

AFS-460
Original to: File
Copies to: NFPO
NFDC
RFSD-AWOPM

Region FSD
Copies to: FSDO/CMO for the proponent
FSDO for the airport
Non-Federal Developer (as appropriate)
Airport Manager
Applicable Service Area
FPFO
Other distribution (As required)

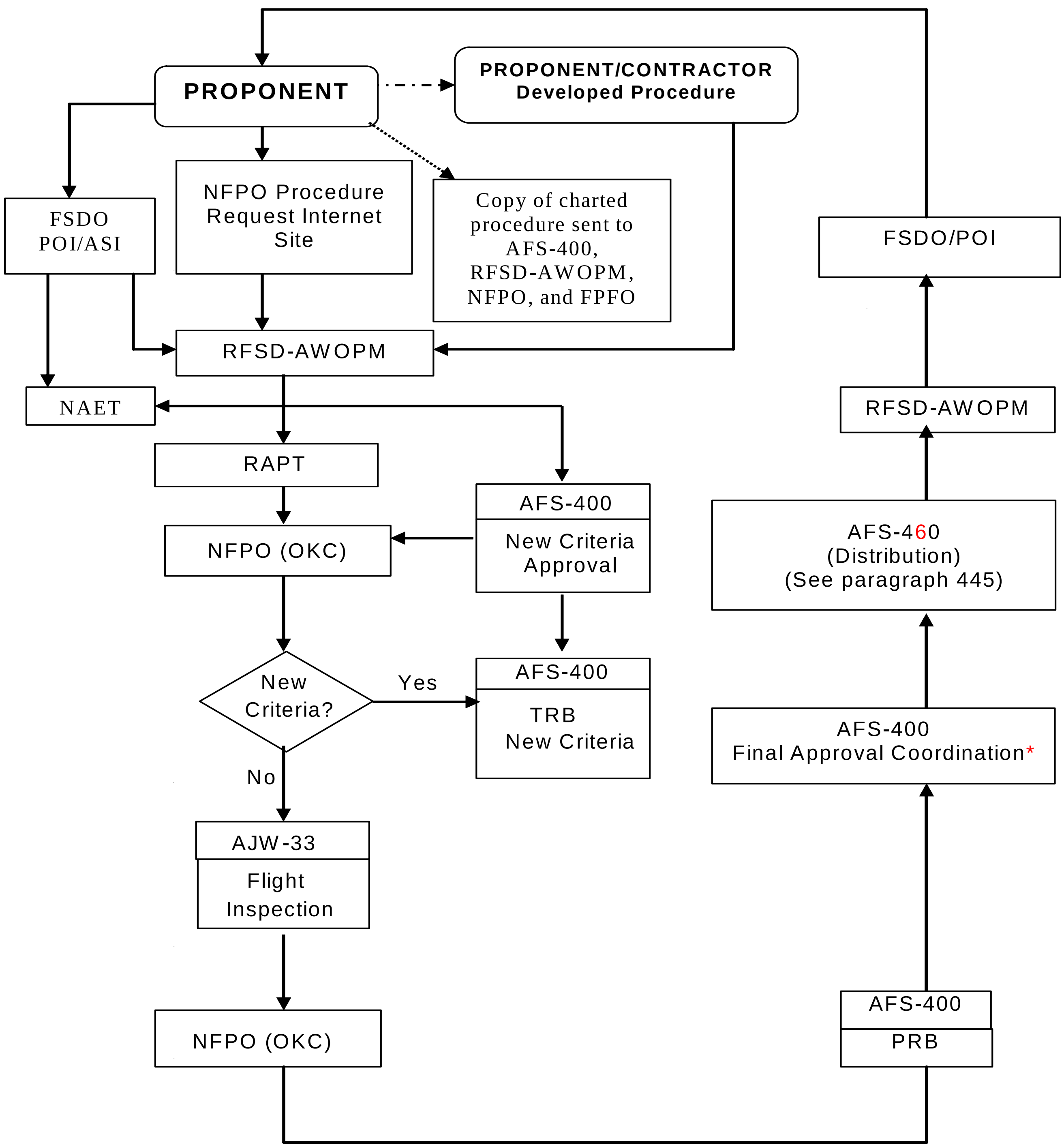
RFSD-AWOPM or FSDO/CMO
Copy to: Proponent(s) and other approved operators

Applicable Service Area
Copy to: ARTCC
ATCT (as appropriate)

Proponent
Copy to: Jeppesen, Inc.
Other Cartographic Companies

446.-449. RESERVED.

Figure 4-1. SPECIALS PROCESSING FLOW DIAGRAM.



*Waiver approval, when required, is conducted simultaneously with Procedure approval.

Figure 4-2. SPECIAL PROCEDURE CHECKLIST.

Special Procedure Checklist		
Location:	ID/Region:	Type of Procedure/Name:
RAPT Priority:	Type Aircraft expected to use procedure:	RFSD-AWOPM:

Special Procedure Information Required	
Why is this a Special?	(Example: Private airport; Nonstandard criteria; etc.)
Is there a similar Public Procedure?	(Example: No/Yes – {Name of procedure})
Is procedure use limited?	(Example: No/Yes – Limited to B-737 aircraft only; Limited to Part 121/135 Operations only; etc.)
Is the procedure developed using non-standard criteria?	(Example: No/Yes – {attach copy of criteria used})
Is a waiver and/or Flight Standards approval letter required?	(Example: No/Yes – FAA Form 8260-1/Flight Standards approval letter attached)
Obstruction Evaluation (OE) Study Plan *	(Example: "Attached" or "Conducted by the NFPO")
NOTAM Plan *	(Action: Attach method to be used for notifying user)
Periodic Review Plan *	(Example: "Attached" or "Conducted by the NFPO")
Flight Inspection Plan*	(Example: "Attached" or "Conducted by the FIOG")
Environmental Assessment*	(Example: "Attached" or "Conducted by the NFPO")
ATC and Airspace Coordination Completed*	(Action: Attach coordination documentation.)
Airport/Heliport Management Coordination Complete*	(Action: Attach coordination documentation.)
POI or FSDO Name and Contact Information*	(Example: {Name}, {Office symbol}, {Phone/e-mail contact})
Proponent/User(s)*	(Example: {Name}, {Address}, {Phone/e-mail contact})

*Items required as specified in Order 8260.19D, paragraph 442.

Comments

SECTION 5. DIRECTION FINDER (DF) PROCEDURES

450. 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.

451. 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.

452. 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 3-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 321. 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.

453. 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 1,000 ft. Round altitudes to the next higher 100-ft increment. Minimum accuracy standards for controlling obstacles are stated in paragraph 271b.

454. DF VECTOR AREA.

a. Criteria. Construct the DF Vector area in accordance with paragraph 451, 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 ft - UNLESS an operational requirement exists for lower altitudes (e.g., initial approach altitude for DF SIAP).

455. DISTRIBUTION.

The NFPO must prepare and approve the Form 8260-10, assign the effective date, and distribute as described in chapter 8, table 8-1.

456. CANCELLATION OF DF PROCEDURES.

When the DF procedure or DF vectoring area is no longer required, the NFPO must take action to cancel the procedure. Continued need must be determined during the biennial review.

457.-459. RESERVED.

SECTION 6. CATEGORY II AND III ILS

460. GENERAL.

a. Guidance. The following directives (latest editions) contain criteria/guidance to be used in the development or amendment of ILS CAT II and III procedures:

(1) Order 8260.3, *United States Standard for Terminal Instrument Procedures (TERPS)*, Volume 3.

(2) AC 120-28, *Criteria for Approval of CAT III Landing Weather Minima for Takeoff, Landing, and Rollout*.

(3) AC 120-29, *Criteria for Approval of CAT I and II Weather Minima for Approach*.

(4) Order 8200.1, *United States Standard Flight Inspection Manual*, chapter 15.

(5) Order 6750.24, *Instrument Landing System and Ancillary Electronic Component Configuration and Performance Requirements*.

(6) Order 8400.8, *Procedures for Approval of Facilities for Part 121 and Part 135 CAT III Operations*.

(7) Order 8400.13, *Procedures for the Approval of Special Authorization Category II and Lowest Standard Category I Operations*.

b. Advise the general public of airports authorized CAT I, II, and III minimums by publishing the appropriate Part 97 SIAP. CAT IIIc minimums must be included in the minimums format of the IAP [see paragraph 854k].

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 HGS/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 HGS/autoland operations on that runway, and this fact is listed in their operations specifications, they cannot conduct CAT III HGS/autoland operations. AFS-410/470 acts as the clearing house for listing which combinations of HGS/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.

461. ACTION.

a. Regions.

(1) Applicable Technical Operations Service Areas and NFPO coordination is essential. The NFPO, having planned CAT II and III ILS runways in its area of responsibility, must assure the system meets the necessary ground system and obstacle clearance requirements [see Order 8400.8].

Note: The requirements for ensuring obstacle clearance with respect to aircraft/ vehicles on the ground and the marking of ILS glide slope (GS) and localizer (LOC) obstacle free zones are contained in AC 150/5300-13, Airport Design and AC 150/5340-1, Standards for Airport Marking.

(2) RFSD-AWOPM coordinates the procedure request with the RAPT. The RFSD-AWOPM 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 the NFPO [see paragraph 461b(1)].

b. NFPO.

(1) The NFPO 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 a/b/c RVR
(as appropriate).

(f) Date approach procedure will be available.

(2) Amend ILS SIAPs when CAT II, IIIa, IIIb, and IIIc minimums are authorized. Where only CAT II and IIIa are authorized, indicate CAT IIIb and IIIc as not authorized (NA) [see paragraph 854k].

c. Flight Inspection Central Operations (FICO) Technical Services Sub-Team must maintain the current ILS performance classifications in the Aviation System Standards Information System (AVNIS) database. The applicable Technical Operations Service Area must notify the Flight Standards Division and Flight Inspection Technical Operation 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.

462. 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, the NFPO must submit an abbreviated or full amendment [see also paragraph 224d(8)].

463.-469. RESERVED.

SECTION 7. DEPARTURE PROCEDURES (DP)

470. GENERAL.

Use Order 8260.46, *Departure Procedure (DP) Program*, for guidance and standardization for initiating, processing, developing, and managing the DP program.

471.-479. RESERVED.

SECTION 8. STANDARD TERMINAL ARRIVAL (STAR)

480. INTRODUCTION. STARs are developed and managed under the guidance provided in Order 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 the NFPO through the applicable Air Traffic Service Area for review. ARTCCs are responsible for issuance of NOTAMs for STARs.

b. The NFPO's review must ensure obstacle clearance requirements; accuracy of courses, distances, and coordinates; clarity and practicality of the procedures; and assurance of navigational guidance adequacy. The NFPO must coordinate any discrepancies, required adjustments, or improvements noted during the review process and/or flight inspection with the sponsoring air traffic facility.

481. NFPO ACTION.

a. STARs.

(1) Ensure that the STAR commences at a charted high or low altitude en route fix.

(2) Verify, **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) Verify obstacle clearance require-ments 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) Verify 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) Verify the accuracy of courses, distances, and coordinates.

(4) 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 the Aeronautical Information Management Group, AJR-32, and ARTCC in the package forwarded to the applicable Air Traffic Service Area.

482.-489. RESERVED.

SECTION 9. RNAV PROCEDURE DEVELOPMENT

490. 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.

491. RNAV APPROACH PROCEDURE DESIGN. Criteria for the development of RNAV instrument procedures can be found in Order 8260.3 and other related 8260-series orders.

a. All RNAV instrument approach procedures must 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 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 Order 8260.45, *Terminal Arrival Area (TAA) Design Criteria*.

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 (TCH). 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 491b(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 491b(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/LAAS 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).

492. 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. FAA 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 8260-3/5/7 as applicable [see paragraph 851a(6)]. For agencies providing a complete ARINC record printout of a procedure on Form 8260-10, waypoint description codes 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) Missed Approach Point (MAP). 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 an 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.

493. 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 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.

494. 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. An RF leg is the primary curved path route segment for RNAV RNP procedures. Waypoints defining the beginning **and** end point of the RF turn must be designated as "Fly-by."

d. Course-to-Altitude (CA) Leg. The CA leg is used to code the initial leg at the beginning of the missed approach segment. This leg type requires a stated course and altitude at the beginning of the missed approach. This altitude will be the lowest of DA, MDA, or 400-ft above airport elevation (for helicopter point-in-space procedures, use lowest DA or MDA). A DF leg must always follow a CA leg.

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. Although the CF leg is used in many traditional approach and departure procedures, this leg type is to be avoided in the design of RNAV procedures.

h. Vector-to-Fix (VM) Leg. A VM leg is used for whenever a departure route description specifies a course or heading to fly in expectation of a radar vector**.**

i. Vector-to-Intercept (VI) Leg. A VI leg defines a specified heading to intercept the subsequent leg at an unspecified position.

495. 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 (future documentation and transmittal of this information will be via electronic means). Guidance on producing data that are placed on this form is located in appendix 11.

c. FAS Data Block coordinates must be in WGS-84 coordinate system.

496. REMOTE ALTIMETER SETTING FOR BARO-VNAV.

Baro-VNAV systems cannot fly to approach minimums based on a remote altimeter setting. See paragraph 855e(8) for appropriate notes on this procedure.

497. CRITICAL TEMPERATURE.

Temperature limits above and below which Baro-VNAV operations are not authorized are published on RNAV instrument approach procedures. TERPS criteria provide 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 shall not exceed **54°C (130°F)**. Document actual high temperature in the remarks section of Form 8260-9. Document the ISA deviation value used, if other than standard, in the remarks section of the Form 8260-9.

Note 1: When the temperature values are calculated to a decimal point, round to the "colder" whole temperature unit for the maximum temperature value and to the "warmer" whole temperature unit for the minimum temperature value.

Note 2: Do not publish a maximum temperature in excess of 130 degrees Fahrenheit.

498. DME/DME SCREENING MODEL.

Apply the RNAV-Pro DME screening model to ensure satisfactory availability and geometry of DME navigation signals for RNAV instrument approach 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. Further analysis of the screening model will determine if the data obtained are satisfactory to support the procedure.

499. ADDITIONAL DOCUMENTATION WITH BARO-VNAV (LNAV/VNAV AND RNP), LOCAL AREA AUGMENTATION SYSTEM (LAAS) AND/OR WIDE AREA AUGMENTATION SYSTEM (WAAS) INSTRUMENT APPROACH PROCEDURES.

a. Enter a 5-digit WAAS/LAAS channel number into the Additional Flight Data block of the 8260-series form [see paragraph 857l(3)]. A block of WAAS channel numbers is allocated to the National Flight Procedures Office by the National Flight Data Center. LAAS channel numbers must be calculated using a specific frequency that is currently obtained from Region Spectrum Management Office. LAAS channel numbers also must be obtained for each IAF. If there are no IAFs (e.g., a RADAR REQUIRED procedure), a single channel number is still required. This paragraph does not apply to RNAV RNP procedures.

b. Enter Approach ID, e.g., **W09A/L18A** into the Additional Flight Data block of the 8260-series form [see paragraph 857l(3)]. This is the same as the Reference Path Identifier described in appendix 12 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 497.

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 8260-3/7 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, paragraph 5.7. Also see paragraph 857l(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 8260.45. 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 8260-series form [see paragraph 851a(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 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 851a(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 must be placed adjacent to the feeder fix or IAF stating the required RNP value. Document this in the "Notes" section of Form 8260-3. Use "**Chart planview note at (fix name): (RNP 0.XX).**"

j. RNAV (RNP) speed restrictions [See Order 8260.52] must be noted on the chart. Use "**Chart planview note at LUCIG: Max 190 KIAS**." For missed approach, specify 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 499k(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 segment requires 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 wingspan value to be used when calculating the Vertical Error Budget (VEB). When a 136-ft wingspan is selected for use in the calculations, 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 ft.**"

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 3.

CHAPTER 5. AIRSPACE

SECTION 1. OBSTRUCTION EVALUATION (OE).

500. GENERAL.

The 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.

501. RESPONSIBILITY AND PROCESSING OF FAA FORM 7460-1.

The Obstruction Evaluation Services Team, AJR-322, has the responsibility to process all Forms 7460-1 in accordance with Part 77 and Order 7400.2, *Procedures for Handling Airspace Matters*. In this regard, the NFPO must ensure that a complete evaluation of the effect the proposed construction or alteration will have on IFR aircraft operations, including the visual portion of an IFR procedure, is provided to Air Traffic. The NFPO must also assist Air Traffic in reconciling possible discrepancies in IFR findings made by the military services. Additionally, the Regional Flight Standards Division - All Weather Operations Program Manager (RFSD-AWOPM), must serve as the focal point for assessing VFR operational impact. Initial impact assessments should be made by the FPFO and RFSD. The NFPO (IFR) and AFS-420 (VFR) must accomplish headquarters-level case reviews.

502. REVIEW OF NOTICES.

The NFPO and Flight Standards personnel normally involved in the evaluation of Notices of Construction or Alteration should be thoroughly familiar with applicable parts of Order 7400.2. The effect of a proposed structure on aircraft operations should be fully stated. Consultation with the appropriate FSDO and/or FIOG may be helpful in formulating recommendations. The following should be considered:

a. Effect on VFR Traffic. The RFSD-AWOPM evaluates OE cases for VFR effect in accordance with the policies set forth in Order 7400.2. Those evaluations include proposed structures circularized for public comment and cases specifically routed to the RFSD by the ATO (e.g., obstacles near helicopter routes, sensitive cases, etc.). The RFSD is specifically responsible for identifying the effect upon fixed-wing and helicopter VFR routes [except for Charted Visual Flight Procedures (CVFPs) that are the responsibility of the ATO], terminal operations, and other concentrations of VFR traffic. When requested by air traffic, the RFSD will also evaluate the mitigation of adverse effect on VFR operations for marking and/or lighting of structures. Per Order 7400.2, the ATO may request any division to review an OE study on a case-by-case basis and the RFSD will provide assistance in this area as requested.

b. Departure Obstacle Assessments. There are occasions when a proposed object located near a Title 14 CFR Part 139 commercial service airport that could have an adverse effect on certificated air carrier one-engine inoperative (OEI) departure considerations. AC 150/5300-13, *Airport Design*, contains guidance for airports regarding objects that should be identified that penetrate the OEI obstacle identification surface (OIS) that starts at the departure end of the runway at the elevation of the runway at that point, and slopes upward at 62.5:1. The RSFD-AWOPM may be asked to provide an analysis of potential OEI impact to assist airport operators if an OE evaluation is conducted for an on-airport structure - vice processing an NRA proposal. The ATO, or in some cases the Regional Airport Division, may also seek the input of FS on unusually sensitive cases that generate significant user comments or concerns involving departure obstacles near airports. In any event, FAA policy currently does not specifically address a determination of hazard for off-airport obstacles where identified impacts are due solely to OEI procedures. The AWO may use the AFS-400 developed evaluation tool, RNAV-Pro, to provide input to the ATO and/or an airport operator regarding potential adverse effects on OEI. This tool is not intended to supply FAA certified engineering quality aircraft performance solutions. It provides a screening device for Flight Standards inspectors to generally quantify whether proposed objects near a known departure path may have an effect on Title 14 CFR Part 25 certificated aircraft operational requirements and the regulatory requirements for lateral aircraft obstacle avoidance. Where general input is desired at a major air carrier airport (domestic or international), the inspector should consider providing evaluations of both the FAA recommended OEI surface (AC 120-91) as well as the International Civil Aviation Organization (ICAO) splay. The ICAO splay could provide useful information for an airport operator, ATC and/or operators when considering required NOTAM action and coordination for temporary objects near the airport or under the control of the airport operator. At this time, all OEI input to the OE process by the RFSD is considered advisory.

c. Terminal Area IFR Operations. The NFPO must assess the effect upon terminal area IFR operations to include approach/departure procedures, transitions, radar vectoring charts, holding patterns, and STARs. The study must assess the effect upon any segment of an existing or proposed instrument approach/departure procedure and any restrictions.

d. En Route IFR Operations. The NFPO must assess the effect upon en route IFR operations to include MEAs, MOCAs, MCAs, MHAs, MIA charts, and turning areas.

e. Accuracy. All studies must be made assuming the obstruction will be built or modified to the height specified in the study. If the proposed obstruction qualifies as the controlling obstacle for an IFR procedure, re-evaluate the proposed structure for impact using a 4D accuracy code. This impact must be forwarded to Air Traffic as the IFR impact. However, the NFPO must also provide the survey accuracy required to mitigate the impact; i.e., "a surveyed accuracy of ‘xx’ horizontally and ‘xx’ vertically will result in either reduced or no IFR impact" [see chapter 2, section 11].

f. NAVAID Interference. When informed by Air Traffic that it has been determined by Air Traffic Technical Operations Service and/or frequency management personnel, that there may be interference with facility performance, the NFPO determines the effect upon any instrument flight procedure. This includes radio or NAVAID interference through inter-modulation, overload, spurious, or harmonic conditions that affect the receiver performance. Provide protection for all IFR areas and altitudes.

g. Adjustments to Instrument Flight Procedures. During negotiations with proponents or when requested by Air Traffic, AJW-3, or AFS, specialists should provide what procedure adjustments can be made to mitigate the effect without adversely affecting the procedure. The NFPO 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. If, during a procedural review or while on a site visit, it becomes obvious for safety reasons that the existence of a previously unknown obstacle requires procedure minimums to be increased, expedite accomplishment of the change by means of a NOTAM.

h. Statement of Adverse Impact. If the proposed construction or alteration will have an adverse effect on VFR or IFR aircraft operations, procedures, useable runway length, or minimum IFR flight altitudes, the NFPO and Flight Standards evaluations should clearly state the extent of these effects. Air Traffic is responsible for making the final determination of whether adverse impacts are "substantial" or "minimal."

i. AC 70/7460-1 Obstruction Marking and Lighting. The NFPO and Flight Standards personnel should be familiar with this advisory circular so that appropriate remarks can be made regarding the requirements. This is especially important where exceptions from marking and lighting standards have been requested by the applicant.

503. OBSTRUCTIONS UNDER SUBPART C, 14 CFR PART 77.

Construction or alterations identified as obstructions based on the standards of Sub-part C, although not automatically hazardous to air navigation, are presumed to be hazards to air navigation until an FAA study has determined otherwise.

SECTION 2. DESIGNATION OF CONTROLLED AIRSPACE

504. GENERAL.

a. To afford separation from other aircraft, all instrument flight procedures 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 402c.

b. Order 7400.2 clarifies that a 300-ft buffer should be taken into consideration when computing airspace requirements for IFR procedures. Therefore, a 300-ft buffer has been included in the references to the 1,000-ft and 1,500-ft points in paragraph 507.

505. 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.

506. NFPO 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. The NFPO must coordinate with the applicable Air Traffic Control facility to determine if further procedure development needs to be delayed pending any airspace action.

b. NFPO 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-ft airspace extension.

c. Document data, as described in paragraph 507k, on the Form 8260-9, *Standard Instrument Approach Procedure Data Record*, supports the IAP being designed. [See paragraph 860c "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 the NFPO and the Air Traffic Service Area. However, to avoid loss of data, it is strongly recommended that the NFPO 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."

507. 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-ft airspace extensions.

a. The requirement to designate controlled airspace is contained in Order 7400.2, part 4.

b. The nearest 100-ft principle must be applied to determine the height of the controlling terrain. Example: A terrain elevation of 249.99 ft MSL would be considered as 200 ft; 250.00 ft MSL as 300 ft.

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 1,000 ft above the surface at a point outside the basic surface area. Where multiple approach pro-cedures 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.

(1) Procedures with vertical guidance. Where ILS, MLS, WAAS (LPV), LAAS, LNAV/VNAV, etc. procedures are involved, the 1,000-ft 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 1,000 ft to figure 5-1 and subtract the MSL elevation of the TCH.

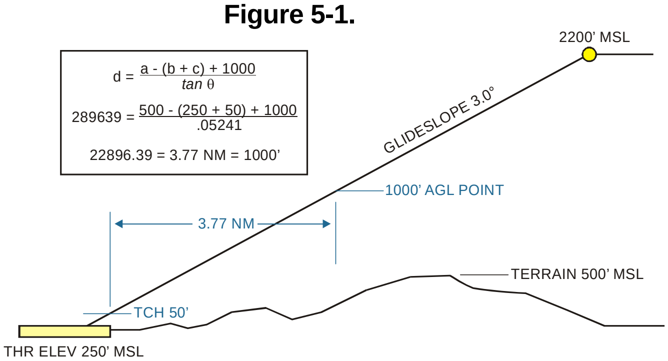
(c) Divide the result by the GS tangent.

$$d = \frac{a - (b + c) + 1000}{\tan(\theta)}$$

$$\begin{aligned} \text{where: } a &= \text{highest terrain} \\ b &= \text{THRe} \\ c &= \text{TCH} \\ \theta &= \text{Glidepath Angle} \\ d &= \text{Dist (ft) THR to 1000' point.} \end{aligned}$$

Note: To compute the 1,500-ft point, substitute 1,500 for 1,000 in the above formula.

Figure 5-1.



(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 1,000-ft point for LOC-only (or AZ-only) should be determined in the same manner as for nonprecision SIAPs [see paragraphs 507c(2) through (4)].

(e) To locate a 1,000-ft point in a segment prior to the FAF, apply the provisions of paragraphs 507c(2) through (5).

(2) Nonprecision approach procedures (NoPT w/FAF):

(a) When the SIAP specifies a minimum altitude at the FAF greater than 1,000 ft above the highest terrain in the final segment, the 1,000-ft point is assumed to be inbound from the FAF at a distance determined by application of a descent gradient of 500 ft/NM for distances in excess of 7 NM from runway threshold, and 300 ft/NM for distances at/less than 7 NM from the runway threshold; i.e., use both gradients to compute the 1,000-ft point when the final segment is longer than 7 NM [see figures 5-2 and 5-3].

Figure 5-2.

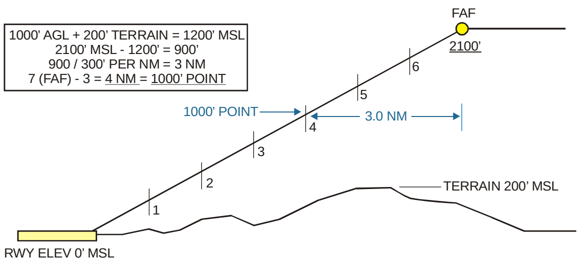
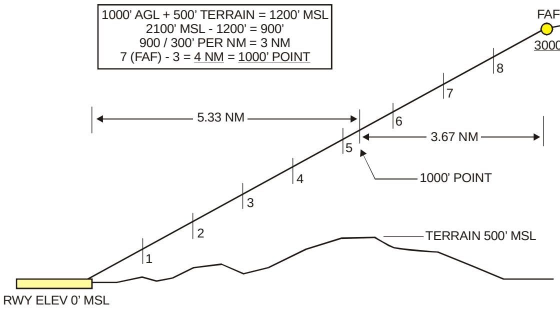
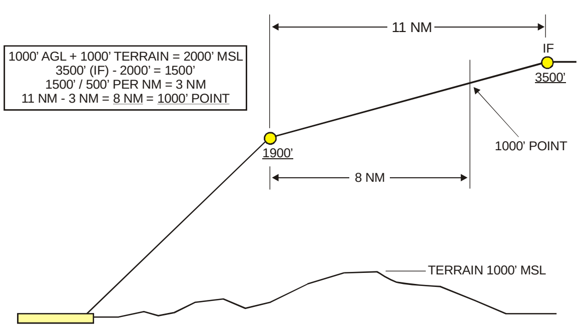


Figure 5-3.



(b) When the SIAP specifies a minimum altitude at the IF greater than 1,000 ft above the highest terrain in the intermediate segment, the 1,000-ft point is assumed to be inbound from the IF at a distance determined by application of a 500 ft/NM descent from the IF [see figure 5-4].

Figure 5-4.



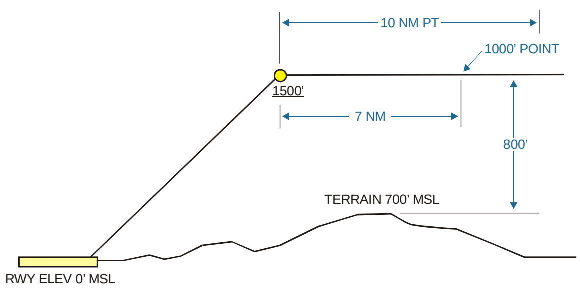
(3) Nonprecision Approach Procedures with Procedure Turn (PT):

(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 1,000-ft point is assumed to be 7 NM outbound beyond the facility for a 10-mile PT, and 5 NM outbound for a 5-mile PT.

(b) Procedure Turn Over FAF:

1 When the SIAP specifies a minimum altitude at the FAF less than 1,000 ft above the highest terrain in the intermediate segment, the 1,000-ft point is assumed to be 7 NM outbound beyond the FAF for a 10-mile PT, and 5 NM outbound for a 5-mile PT [see figure 5-5].

Figure 5-5.



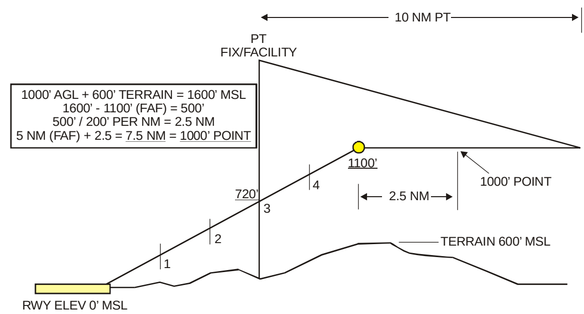
2 When the SIAP specifies a minimum altitude at the FAF less than 1,000 ft above the highest terrain in the final segment, BUT greater than 1,000 ft above the highest terrain in the intermediate segment, establish the 1,000-ft point at the FAF.

3 When the SIAP specifies a minimum altitude at the FAF greater than 1,000 ft above the highest terrain in the final segment, establish the 1,000-ft point as per paragraph 507c(2)(a).

(c) PT Over Facility/Stepdown Fix AFTER the FAF:

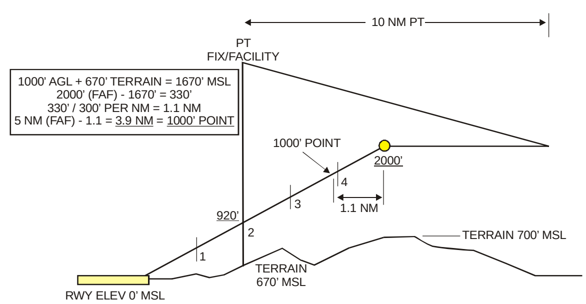
1 Where the SIAP specifies a minimum altitude at the FAF less than 1,000 ft above the highest terrain in the intermediate segment, the 1,000-ft point is assumed to be outbound beyond the FAF at a distance determined by application of a 200 ft/NM descent to the FAF [see figure 5-6].

Figure 5-6.



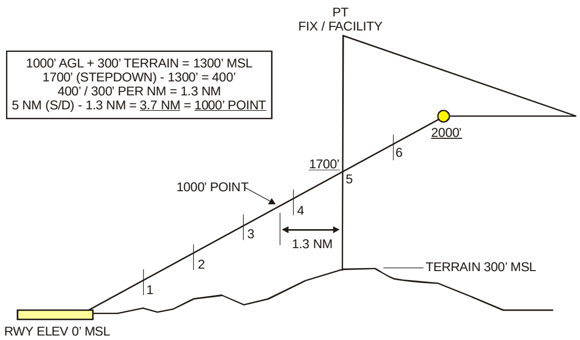
2 Where the SIAP specifies a minimum altitude at the final stepdown fix less than 1,000 ft above the highest terrain in the final segment, while specifying a minimum altitude at the FAF greater than 1,000 ft above the highest terrain in the intermediate segment, the 1,000-ft point is assumed to be inbound from the FAF at a distance determined by application of a 300 ft/NM descent gradient from the FAF. Use 500 ft/NM descent gradient for the distance that the FAF exceeds 7 NM from the threshold [see figure 5-7].

Figure 5-7.



3 Where the SIAP specifies a minimum altitude at the final stepdown fix greater than 1,000 ft above the highest terrain in the final segment, the 1,000-ft point is assumed to be inbound from the final stepdown fix at a distance determined by application of a 300 ft/NM descent gradient from the final stepdown fix. Use 500 ft/NM descent gradient for the distance that the stepdown fix exceeds 7 NM from the threshold [see figure 5-8].

Figure 5-8.

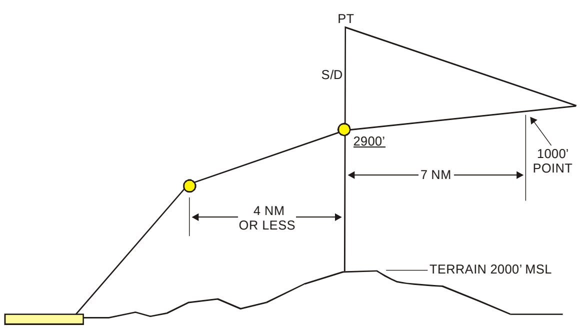


(d) Procedure Turn Over Step-down PRIOR to the FAF:

[**Condition:** Distance between the stepdown fix/facility and the FAF less than 5 NM - see Order 8260.3B, Volume 1, paragraph 244d.]

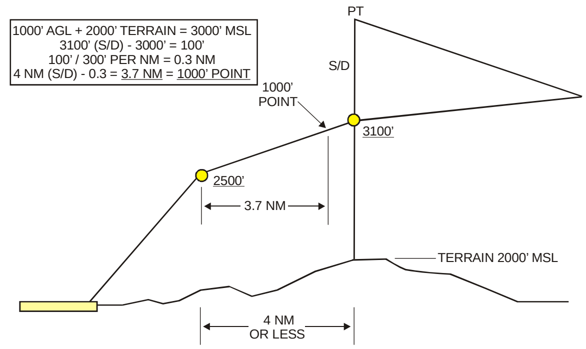
1 If the PT **completion altitude** is equal to or greater than, BUT the minimum **altitude at the stepdown fix/facility** is less than 1,000 ft above the highest terrain in the segment underlying the course reversal, the 1,000-ft point is assumed to be 7 miles from the stepdown fix/facility on the PT inbound leg [see figure 5-9].

Figure 5-9.



2 If the minimum **altitude at the stepdown fix/facility** is greater than 1,000 ft above the highest terrain in the segment between the fix/facility and the FAF, the 1,000 ft point is assumed to be inbound from the fix/facility at a distance determined by application of a 300 ft/NM descent from the stepdown fix/facility [see figure 5-10].

Figure 5-10.



3 If the **1,000-ft point is inside the FAF**, apply methodology in paragraph 507c(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 507c(3)(e).

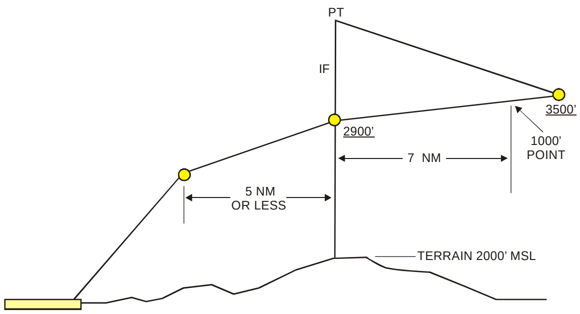
Note: Where the distance between the stepdown fix/facility and the FAF equals 5 NM, either Order 8260.3B, Volume 1, paragraph 244d or 244e may be applied; use the appropriate guidance above or below accordingly.

(**e) PT over the IF. (Inter-mediate Fix)**

1 If the PT completion altitude is less than 1,000 ft above the highest terrain in the segment underlying the course reversal, the 1,000-ft point is in the PT maneuvering area.

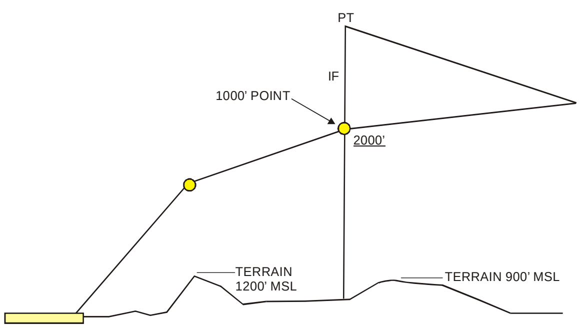
2 If the PT completion altitude is greater than or equal to 1,000 ft above the highest terrain in the segment underlying the course reversal, the 1,000-ft point is assumed to be 7 NM from the PT fix/facility on the inbound leg [see figure 5-11].

Figure 5-11.



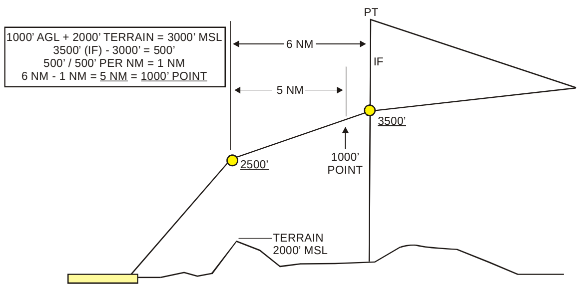
3 If the minimum **altitude at the IF** is greater than 1,000 ft above the highest terrain in the segment underlying the course reversal, BUT less than or equal to 1,000 ft above the highest terrain in the intermediate segment, the 1,000-ft point is at the IF [see figure 5-12].

Figure 5-12.



4 If the minimum **altitude at the IF** is greater than 1,000 ft above the highest terrain in the intermediate segment, the 1,000-ft point is assumed to be inbound from the IF at a distance determined by application of a 500 ft/NM descent from the IF [see figure 5-13].

Figure 5-13.



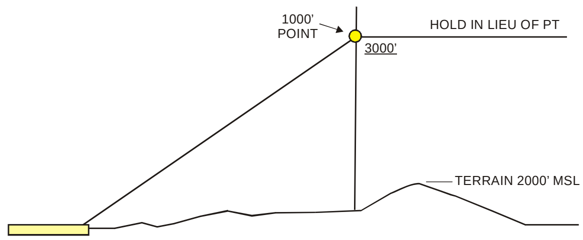
5 If the **1,000-ft point is inside the FAF,** apply methodology in paragraph 507c(2)(a).

(4) Hold-in-Lieu-of Procedure Turn:

(a) At the FAF:

1 If the minimum **altitude at the FAF** is 1,000 ft above the highest terrain in the final segment, the 1,000-ft point is at the FAF [see figure 5-14].

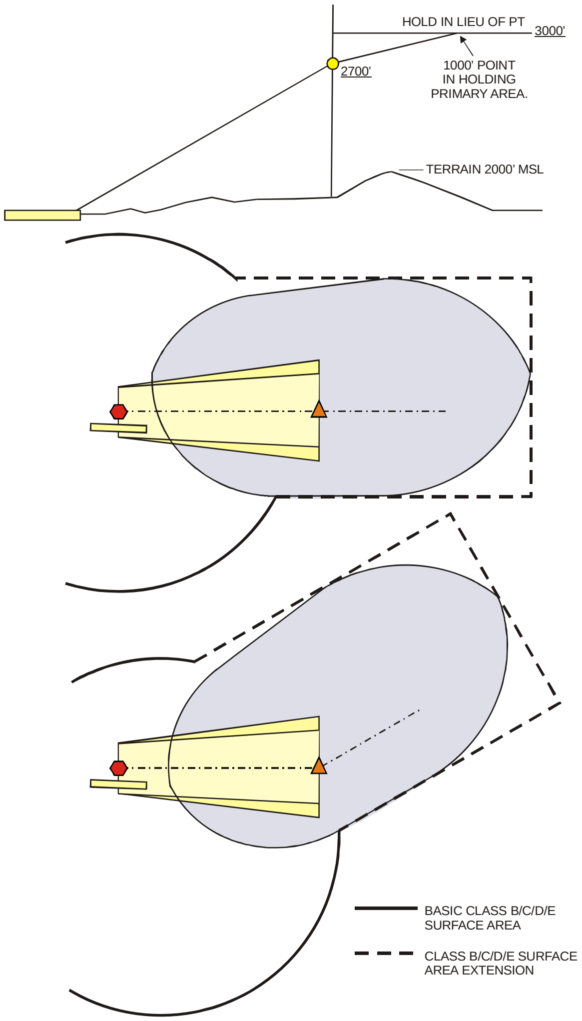
Figure 5-14.



2 If the minimum **altitude at the FAF** is greater than 1,000 ft above the highest terrain in the final segment, apply the methodology in paragraph 507c(2)(a).

3 If the **minimum hold-in-lieu-of-PT altitude** is equal to or greater than, BUT the minimum altitude at the FAF is less than 1,000 ft above the highest terrain underlying the course reversal, the 1,000-ft 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 5-15].

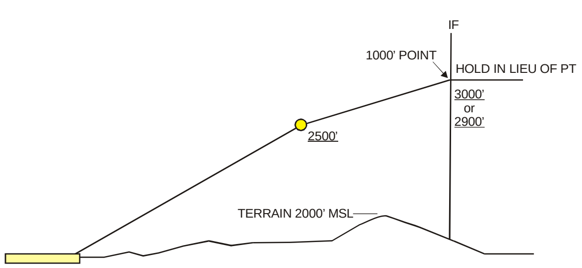
Figure 5-15.



(b) At the IF.

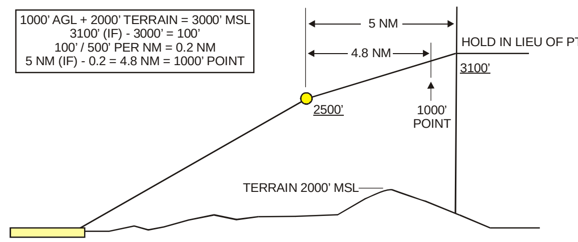
1 If the minimum altitude at the IF is less than or equal to 1,000 ft above the highest terrain in the intermediate segment, the 1,000-ft point is at the IF [see figure 5-16].

Figure 5-16.



2 If the minimum **altitude at the IF** is greater than 1,000 ft above the highest terrain in the intermediate segment, the 1,000-ft point is assumed to be inbound from the IF at a distance determined by application of a 500 ft/NM descent from the IF [see figure 5-17].

Figure 5-17.



3 If the minimum altitude at the IF AND at the FAF are greater than 1,000 ft above the highest terrain in the intermediate segment, apply the methodology in paragraph 507c(2).

(5) General. For PT distances greater than 10 NM (out to 15 NM maximum), increase the distance to the assumed 1,000-ft point 1 NM for each mile in excess of 10 NM.

d. Class B/C/D/E Surface Area Extension Width.

(1) ILS, MLS, WAAS, LAAS, LNAV/VNAV. The width of the Class B/C/D/E Surface Area extension for ILS, MLS, WAAS, LAAS, LNAV/VNAV is established by determining the width of the final approach primary TERPS area at the point the aircraft reaches 1,000 ft AGL [see paragraph 507c(1)]. The width of the extension must not be less than 2 NM (1 mile each side of the localizer/azimuth course) regardless of the width of the precision primary area at the 1,000-ft point

(a) Refer to Figure 5-18. If the aircraft reaches 1,000 ft 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 507c(1) to determine the distance from the threshold to the 1,000-ft point; then subtract 200 ft. The resultant figure is then used as "D" in the precision for determining the half-width of the precision primary area: $1/2W = .10752D + 700'$.

Figure 5-18.

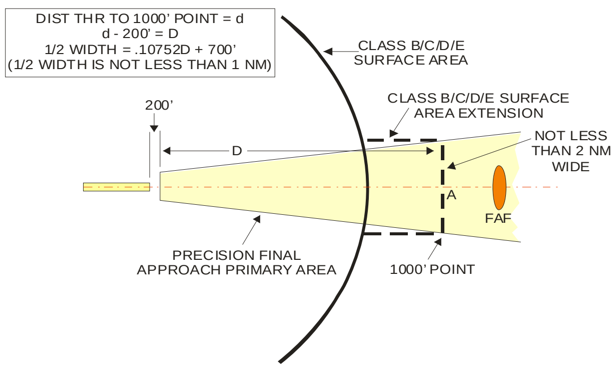
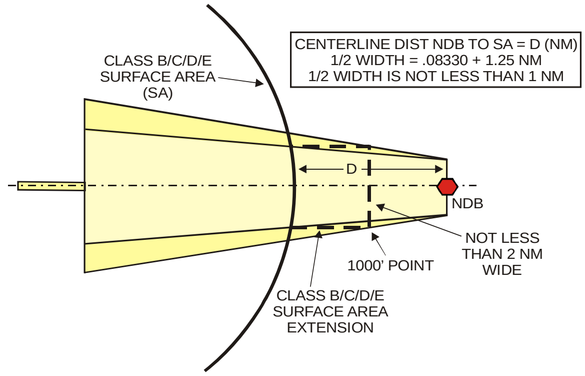


Figure 5-19.



(b) Where the 1,000-ft point is located in the intermediate segment, additional analysis is required. Since the ILS or MLS FAF and the underlying LOC or AZ 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 1,000-ft point must be the **greater** of the two segment widths. Use the guidance in Order 8260.3B, Volume 1, chapter 2 for calculating the respective widths.

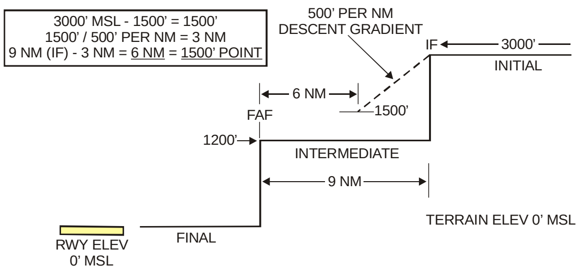
(2) Nonprecision: The width of the Class B/C/D/E Surface Area extension for other than ILS/MLS is established by measuring the width of the final approach primary area at the widest point between the surface area boundary and the 1,000-ft point. For final segments that expand toward the basic surface 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 5-19].

Where the 1,000-ft point is located in the intermediate segment, determine the segment width abeam the 1,000-ft point using the appropriate guidance in Order 8260.3B, Volume 1, chapter 2.

e. Class E 700-Ft Airspace Arrival Extensions*.* A 700-ft Class E airspace extension should be established whenever a SIAP authorizes descent to less than 1,500 ft AGL. The **width** of the Class E 700-ft 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-ft airspace and the point where the aircraft descends below 1,500 ft AGL. The methods used to locate the 1,500-ft point in a **precision final** are similar to those used to locate the 1,000-ft point. Refer to paragraph 507c(1) and use 1,500 ft in place of 1,000 ft. For **other precision segments, or for LOC/AZ,** refer to paragraphs 507e(1) through (3).

(1) No PT: Apply the methodology contained in paragraphs 507c(2)(a) and (b); except, where a 300 ft/NM descent gradient was used, apply a 500 ft/NM for the 1,500 ft determination. In figure 5-20, the aircraft will reach 1,500 ft AGL at 6 miles prior to the FAF using a 500 ft /NM descent gradient from the IF [see figure 5-20].

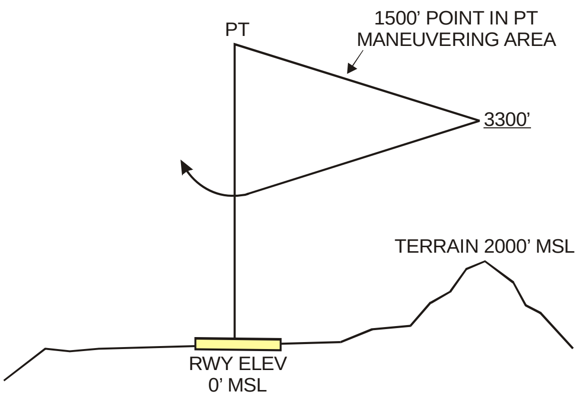
Figure 5-20.



(2) Procedure Turn:

(a) On-Airport No FAF. For a **10-mile PT**, the 1,500-ft point is assumed to be 7 miles from the PT fix or facility on the inbound leg. Similarly, for a **5-mile PT,** the 1,500 ft point is assumed to be 5 miles from the PT fix or facility. HOWEVER, if the **PT completion altitude** is less than 1,500 ft above the highest terrain in the final segment underlying the course reversal, then the 1,500 ft point is in the PT maneuvering area [see paragraph 507k(7) and figure 5-21].

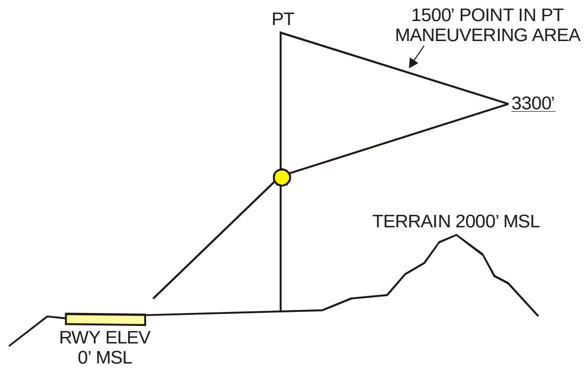
Figure 5-21.



(b) PT Over the FAF.

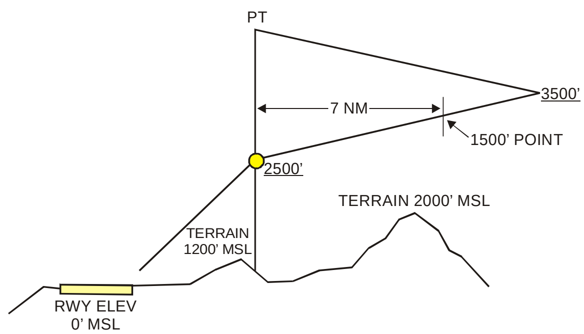
1 If the **PT completion altitude** is less than 1,500 ft above the highest terrain in the intermediate segment, the 1,500-ft point is in the PT maneuvering area [see paragraph 507k(7) and figure 5-22].

Figure 5-22.



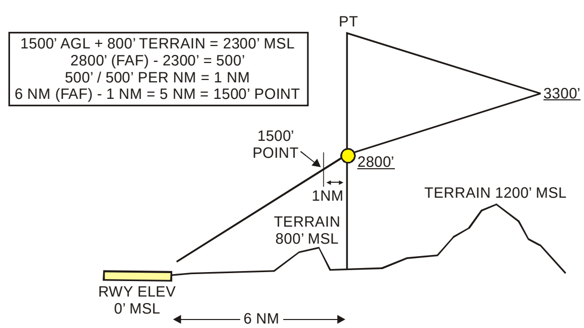
2 If the **PT completion altitude** is 1,500 ft or more above the highest terrain in the intermediate segment, the 1,500-ft point is assumed to be 7 miles from the PT fix or facility on the PT inbound leg (5 NM for a 5-mile PT) [see figure 5-23].

Figure 5-23.



3 If the **FAF altitude** is greater than 1,500 ft above the highest terrain in the final segment, the 1,500-ft point is assumed to be inbound from the FAF at a distance determined by application of a 500 ft/NM descent gradient [see figure 5-24].

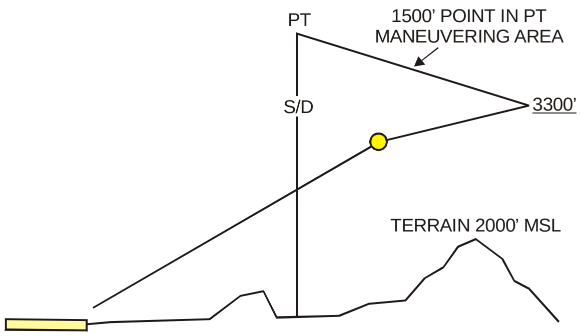
Figure 5-24.



(c) PT Over a Stepdown Fix AFTER the FAF.

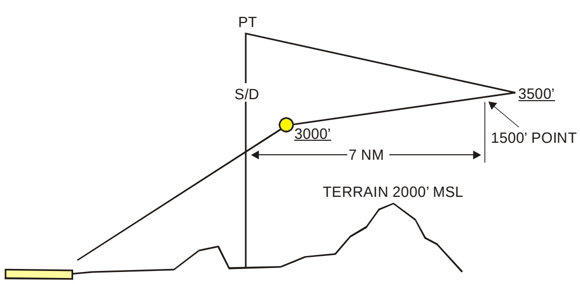
1 If the **PT completion altitude** is less than 1,500 ft above the highest terrain in the segment underlying the course reversal, the 1,500-ft point is in the PT maneuvering area [see paragraph 507k(7) and figure 5-25].

Figure 5-25.



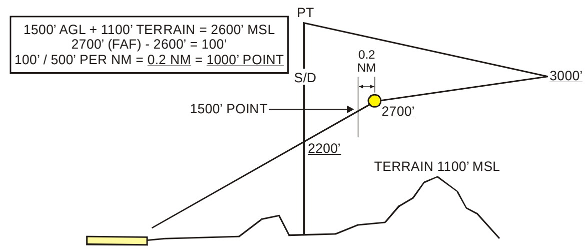
2 If the **PT completion altitude** is 1,500 ft or more above the highest terrain in the segment underlying the course reversal, the 1,500-ft point is assumed to be 7 miles from the PT fix or facility on the PT inbound leg (5 NM for a 5-mile PT) [see figure 5-26].

Figure 5-26.



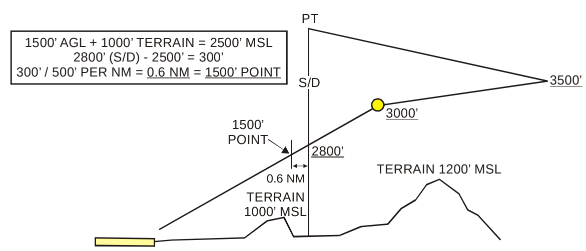
3 If the **FAF altitude** is 1,500 ft or more above the highest terrain in the segment underlying the course reversal or the final segment, the 1,500-ft point is assumed to be inbound from the FAF at a distance determined by application of a 500 ft/NM descent gradient [see figure 5-27].

Figure 5-27.



4 If the **stepdown fix/facility altitude** is 1,500 ft or more above the highest terrain in the final segment, the 1,500-ft point is assumed to be inbound from the stepdown fix/facility at a distance determined by application of a 500 ft/NM descent gradient [see figure 5-28].

Figure 5-28.

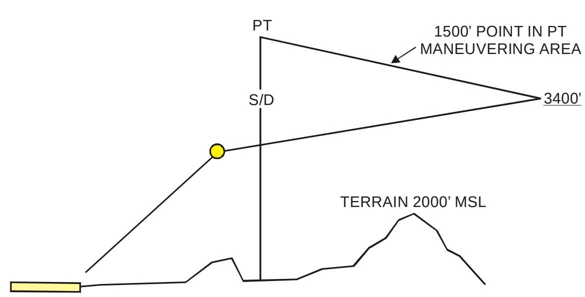


(d) PT Over a Stepdown Fix PRIOR to the FAF:

[**Condition:** Distance between the stepdown fix/facility and the FAF less than 5 NM - see Order 8260.3B, Volume 1, paragraph 244d].

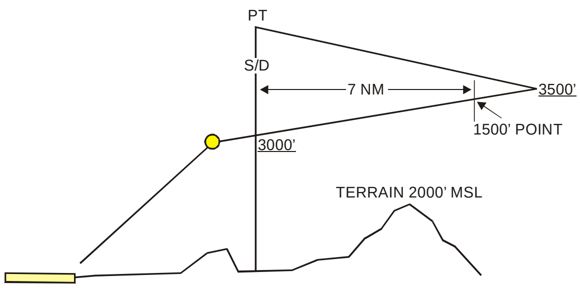
1 If the **PT completion altitude** is less than 1,500 ft above the highest terrain in the segment underlying the course reversal, the 1,500-ft point is in the PT maneuvering area [see paragraph 507k(7) and figure 5-29].

Figure 5-29.



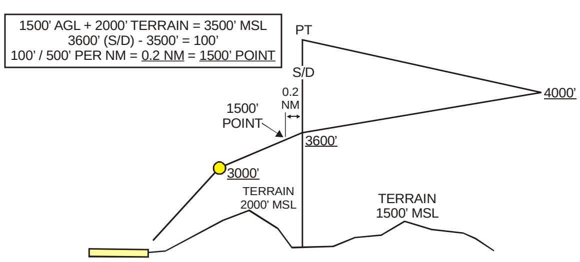
2 If the **PT completion altitude** is equal to or greater than, BUT the minimum altitude at the stepdown fix/facility is less than 1,500 ft above the highest terrain in the segment underlying the course reversal, the 1,500-ft point is assumed to be 7 miles from the stepdown fix/facility on the PT inbound leg [see figure 5-30].

Figure 5-30.



3 If the **stepdown fix/facility altitude** is 1,500 ft or more above the highest terrain in the segment between the fix/facility and the FAF, the 1,500-ft point is assumed to be inbound from the fix/facility at a distance determined by application of a 500 ft/NM descent gradient from the stepdown fix/facility [see figure 5-31].

Figure 5-31.



4 If the **1,500-ft point is inside the FAF,** apply the methodology in paragraph 507c(2)(a) using a 500 ft/NM descent gradient.

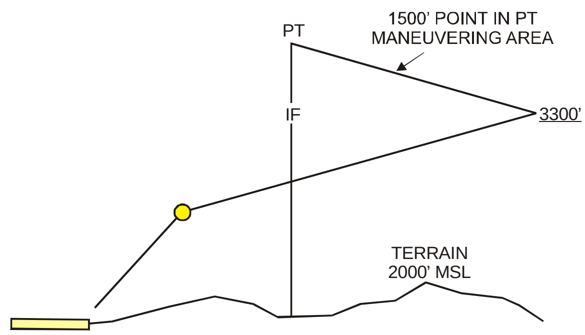
[**Condition**: Distance between the stepdown fix/facility and the FAF greater than 5 NM – see Order 8260.3B, Volume 1, paragraph 244d). Since the **fix/facility becomes the IF** in this case, apply methodology for PT over the IF [see paragraph 507e(2)(e)].

Note: Where the distance between the stepdown fix/facility and the FAF equals 5 NM, either Order 8260.3B, Volume 1, paragraph 244d or 244e may be applied; use the appropriate guidance in paragraph 507e(2)(d) or 507e(2)(e) accordingly.

(e) PT over the IF.

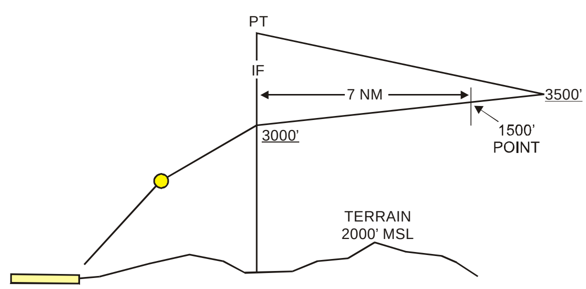
1 If the **PT completion altitude** is less than 1,500 ft above the highest terrain in the segment underlying the course reversal, the 1,500-ft point is in the PT maneuvering area [see paragraph 507k(7) and figure 5-32].

Figure 5-32.



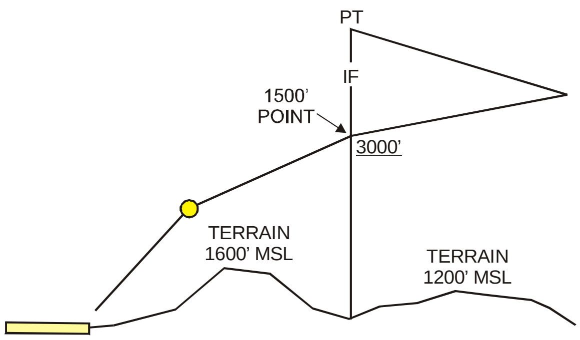
2 If the **PT completion altitude** is equal to or greater than 1,500 ft above the highest terrain in the segment underlying the course reversal, the 1,500-ft point is assumed to be 7 miles from the IF on the PT inbound leg [see figure 5-33].

Figure 5-33.



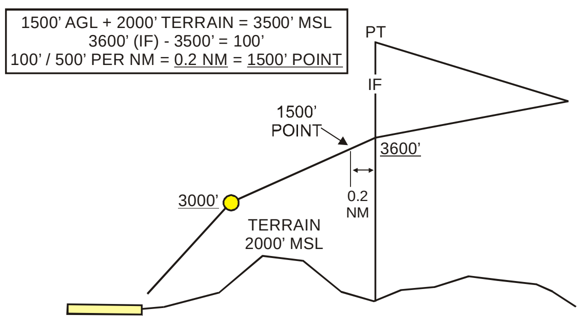
3 If the minimum **altitude at the IF** is equal to or greater than 1,500 ft above the highest terrain underlying the course reversal, BUT less than 1,500 ft above the highest terrain in the intermediate segment, the 1,500 ft point is at the IF [see figure 5-34].

Figure 5-34.



4 If the minimum **altitude at the IF** is greater than 1,500 ft above the highest terrain in the intermediate segment, the 1,500-ft point is assumed to be inbound from the IF at a distance determined by application of a 500 ft/NM descent gradient [see figure 5-35].

Figure 5-35.



5 If the **1,500-ft point is inside the FAF,** apply the methodology in paragraph 507c(2)(b) using a 500 ft/NM descent gradient.

6 If the minimum **hold-in-lieu-of PT altitude** is equal to or greater than, BUT the minimum altitude at the FAF is less than 1,500 ft above the highest terrain in the segment underlying the course reversal, the 1,500 ft point is assumed to be in the holding pattern area. The Class E 700-ft 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 507k(11) and figures 5-36 and 5-37].

Figure 5-36.

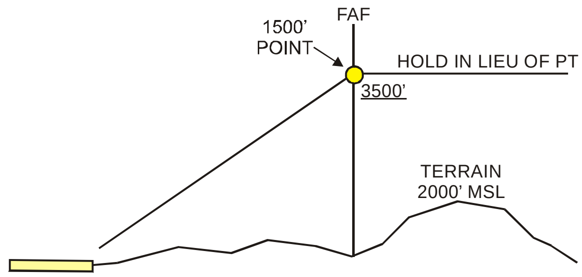
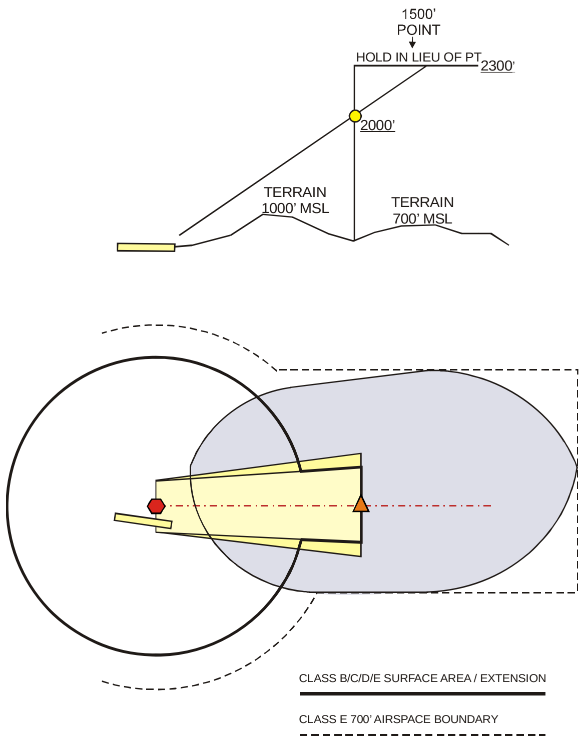


Figure 5-37.



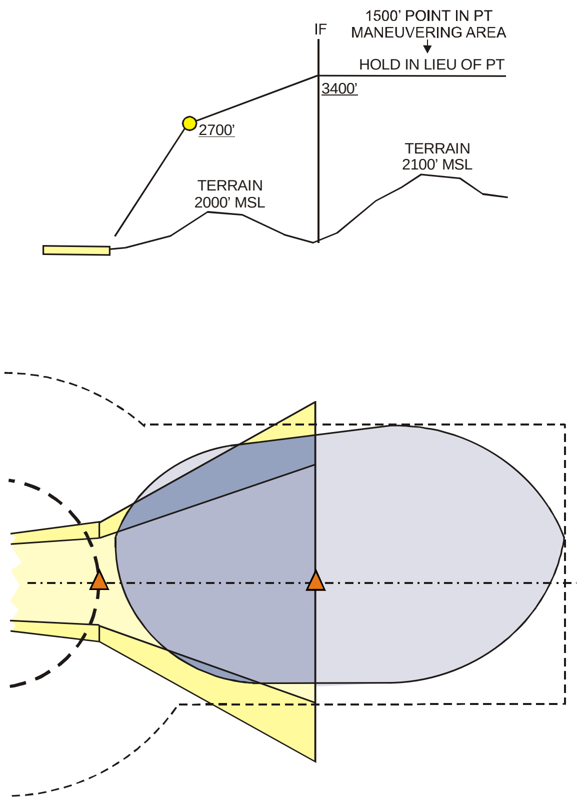
(f) At the IF.

1 If the minimum **altitude at the IF** equals 1,500 ft above the highest terrain in the intermediate segment, the 1,500-ft point is at the IF.

2 If the minimum **altitude at the IF** is less than 1,500 ft above the highest terrain underlying the holding pattern, the 1,500-ft point is in the holding pattern area. The Class E 700-ft airspace extension must encompass the entire holding pattern primary

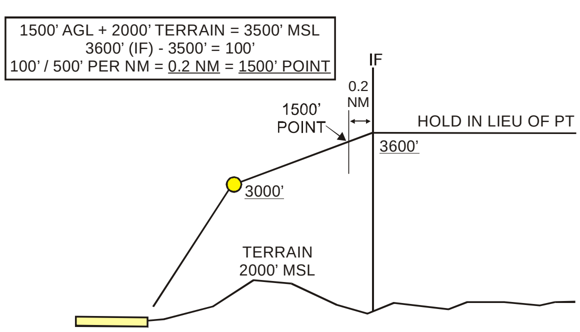
area. Use the pattern size appropriate to the highest holding speed at the published holding altitude [see paragraph 507k(7) and figure 5-38]. Provide the appropriate AT office a drawing clearly depicting the airspace required [see para-graph 507k(11)].

Figure 5-38.



3 If the minimum **altitude at the IF** is greater than 1,500 ft above the highest terrain in the intermediate segment, the 1,500-ft point is assumed to be inbound from the IF at a distance determined by application of a 500 ft/NM descent gradient from the IF [see figure 5-39].

Figure 5-39.

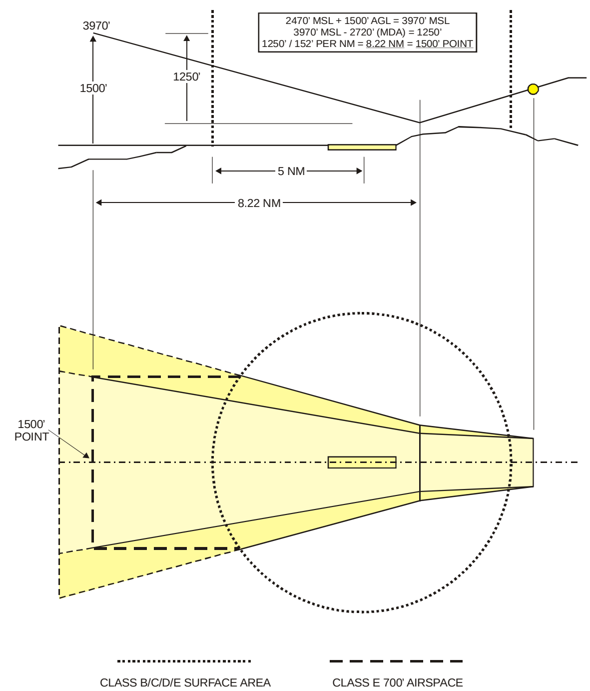


f. Missed Approach. Normally, it can be expected that the airspace required to encompass the IAPs or DPs at an airport will be sufficient to encompass that airspace required for missed approach procedures. This particularly applies to any need for Class B/C/D/E Surface Area extensions. Determine required 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-ft Class E airspace area whenever an IAP authorizes aircraft operation at/below 1,500 ft AGL outside the basic Class B/C/D/E Surface Area. Where the clearance limit is reached prior to the 1,500-ft point, ensure the entire missed approach primary area is contained within Class E 700-ft airspace, including clearance limit holding, if required [see figure 5-40].

Figure 5-40.



g. HI-VOR or NDB (No FAF).

(1) 1,000-Ft Point:

(a) If the penetration turn completion altitude is equal to 1,000 ft above the highest terrain in the area prior to the 10-mile point, the 1,000-ft point is at the 10-mile point.

(**b) If the penetration turn completion altitude** is greater than 1,000 ft above the highest terrain in the area prior to the 10-mile point, the 1,000-ft point is assumed to be inbound from the turn completion point at a distance determined by application of a 500 ft/NM descent gradient.

(2) 1,500-Ft Point: Refer to Order 8260.3B, 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 1,500 ft above the highest terrain underlying the penetration turn, the 1,500-ft 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 507k(12)].

(b) If the penetration turn completion altitude is greater than or equal to 1,500 ft above the highest terrain underlying the penetration turn, AND less than 1,500 ft above the highest terrain in the straight segment prior to the 10-mile point, the 1,500-ft point is at the turn completion point.

(c) If the penetration turn completion altitude is greater than 1,500 ft above the highest terrain underlying the penetration turn in the straight segment prior to the 10-mile point, the 1,500-ft point is assumed to be inbound from the turn completion point at a distance determined by application of a 500 ft/NM descent gradient.

(d) If the FAF altitude is greater than 1,500 ft above the highest terrain in the final segment, apply the methodology in paragraph 507c(2)(a) using a 500 ft/NM descent gradient from the FAF.

h. HI-TACAN, VOR/DME*,* or VOR (with FAF).

(1) 1,000-Ft Point:

(a) If the penetration turn completion altitude is greater than 1,000 ft above the highest terrain in the segment prior to the IF, the 1,000-ft point is assumed to be inbound from the turn completion point at a distance determined by application of a 500 ft/NM descent gradient.

(b) If the penetration turn completion altitude equals 1,000 ft above the highest terrain in the segment prior to the IF, the 1,000-ft point is at the IF.

(c) If the IF altitude is greater than 1,000 ft above the highest terrain in the intermediate segment, the 1,000-ft point is assumed to be inbound from the IF at a distance determined by application of a 500 ft/NM descent gradient.

(d) If the FAF altitude is greater than 1,000 ft above the highest terrain in the final segment, apply the methodology in paragraph 507c(2)(a).

(2) 1,500-Ft Point:

(a) If the penetration turn completion altitude is less than 1,500 ft above the highest terrain between the turn completion point and the IF, the 1,500-ft point is in the penetration turn area.

(b) If the penetration turn completion altitude equals 1,500 ft above the highest terrain between the turn completion point and the IF, the 1,500-ft point is at the turn completion point.

(c) If the penetration turn completion altitude is greater than 1,500 ft above the highest terrain between the turn completion point and the IF, the 1,500-ft point is assumed to be inbound from the turn completion point at a distance determined by application of a 500 ft/NM descent gradient.

(d) If the IF altitude is greater than 1,500 ft above the highest terrain in the intermediate segment, the 1,500-ft point is assumed to be inbound from the IF at a distance determined by application of a 500 ft/NM descent gradient.

(e) If the FAF altitude is greater than 1,500 ft above the highest terrain in the final segment, apply the methodology in paragraph 507c(2)(a) using a 500 ft/NM descent gradient from the FAF.

i. Radar Vector to FAF (Radar Required).

(1) If the FAF altitude is greater than 1,000 ft above the highest terrain in the final segment, apply the methodology in paragraph 507c(2)(a).

(2) If the FAF altitude is less than 1,000 ft above the highest terrain in the final segment, the 1,000-ft point is located PRIOR to the FAF [see paragraph 507k(4)].

(3) If the FAF altitude is greater than 1,500 ft above the highest terrain in the final segment, apply the methodology in paragraph 507c(2)(a) using a 500 ft/NM descent gradient from the FAF.

(4) If the FAF altitude is less than 1,500 ft above the highest terrain in the final segment, the 1,500-ft point is located PRIOR to the FAF [see paragraph 507k(7)].

j. Radar Vector to IF (Radar Required).

(1) If the IF altitude is greater than 1,000 ft above the highest terrain in the intermediate segment, apply the methodology in paragraph 507c(2)(b).

(2) If the IF altitude is less than 1,000 ft above the highest terrain in the intermediate segment, the 1,000-ft point is located PRIOR to the IF [see paragraph 507k(4)].

(3) If the IF altitude is less than 1,500 ft above the highest terrain in the intermediate segment, the 1,500-ft point is located PRIOR to the IF [see paragraph 507k(7)].

(4) If the 1,500-ft point is at/inside the IF, apply the methodology in paragraph 507e(1).

k. Information to be forwarded to ATC: See also paragraphs 506c and 860c(6).

(1) ARP coordinates; threshold coordi-nates (if straight-in authorized).

(2) FAF or IF Coordinates.

(3) Distance from ARP (for circling-only), runway threshold (for straight-in), FAF, or IF to the 1,000-ft point. If applicable, state: **"1,000-ft point located outside FAF** (or IF) **- see current MVA Chart,"** and leave (5) blank.

(4) Width of the segment primary area at the widest point between the Class B/C/D/E Surface Area and the 1,000-ft point; and the highest terrain elevation in the segment containing the 1,000-ft point [see paragraph 507d(2) and figure 5-19].

(5) True course (to the hundredth of a degree) of the segment in which the 1,000-ft point is located.

(6) Distance from ARP (for circling-only), runway threshold (for straight-in), FAF, or IF to the 1,500-ft point. If applicable, state: **"1,500-ft point located in the PT maneuvering area;"** or **"1,500-ft point located in holding pattern area;"** or **"1,500-ft point located outside IF - see current MVA Chart;"** or **"1,500-ft point located outside FAF - see current MVA Chart;"** and leave (7) blank. (The applicable Air Traffic Service Area will then establish the transition area in accordance with Order 7400.2).

(7) Width of the segment primary area at the widest point between the Class E 700-ft airspace (transition area) and the 1,500-ft point; and the highest terrain elevation in the segment containing the 1,500-ft point [see paragraph 507e].

(8) True course (to the hundredth of a degree) of the segment in which the 1,500-ft point is located.

(9) Highest terrain elevation in the PT (or hold in lieu of PT) primary area including entry zone. Include holding pattern size.

(10) For high-altitude penetrations, paragraphs 507k(1) through (9), except paragraph 507k(2), apply. If applicable, state: **"1,500-ft point located in the penetration turn area,"** and leave (8) blank.

(11) For Terminal Arrival Area (TAA) application, the NFPO 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. In the standard letter from the NFPO to the appropriate Air Traffic Service Area (or backside of the 8260-9 if used for this purpose) in which airspace requirements stated in this chapter are detailed, provide the TAA boundary radii values and the radii center points in terms of fix names and coordinates with text describing the shape 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. The NFPO 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 507k.

SECTION 3. AIRPORT AIRSPACE ANALYSIS

508. 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 5100.38A, *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 7400.2, Part 3, are applicable to all participating offices. Therefore, all Flight Standards and the NFPO personnel directly involved in airport airspace analysis must be familiar with Order 7400.2, and those general responsibilities specified in chapter 1, section 2, of this document.

509. NFPO/AFS 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 the NFPO 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.

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 the NFPO, will be provided to the OPR.

AJW-3 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 the NFPO/AFS 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 8700.1, Volume 2, chapter 61. 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 the NFPO and AFS positions are developed and forwarded to the appropriate Airports division/branch. 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.

510. 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.

511. 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, the NFPO 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.

512. 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, the NFPO 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 4. RESERVED

513.- 516. RESERVED.

SECTION 5. RESTRICTED AREAS

517. GENERAL.

a. A restricted area is airspace designated under 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. Restricted areas as such 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.

518. 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.

519. RESERVED.

SECTION 6. ESTABLISHMENT, RELOCATION, OR DISCONTINUANCE OF RADIO NAVIGATION AIDS

520. 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*.

521. NFPO ACTION.

Conduct studies to determine the effect of the proposed action on existing or proposed IFR flight operations. Forward the results of these studies and an NFPO position to the appropriate Air Traffic Service Area.

522. 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 relating to operational impact, and to other interested divisions on request.

523.-599. RESERVED.

CHAPTER 6. MILITARY PROCEDURES

600. GENERAL.

FAA Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), specifies that the U.S. 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 8260.3B 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. U.S. Army Procedures. Under National Agreement 127 (NAT-127), the FAA provides worldwide terminal instrument procedures service for the U.S. Army. Army procedural requirements must be processed in accordance with Order 8260.15, *U.S. Army Terminal Instrument Procedures Service.*

b. U.S. 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. U.S. Navy (USN) Procedures. There is no formal agreement for FAA support of USN procedure development. Questions concerning U.S. Navy procedures must be directed to the Naval Flight Information Group (NAVFIG); Washington Navy Yard; 1339 Patterson Ave., SE, Room 301; Washington, DC 20374-5088. Phone: (202) 433-0009.

601. 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 600) is NOT an FAA responsibility. The Flight Inspection Operations Group (FIOG) 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 840a for processing requirements.

602. 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.

603. 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. The NFPO will provide assistance in completing and processing forms, waivers, and procedures submitted for flight inspection, commensurate with present workload.

604.-699. RESERVED.

(THIS PAGE INTENTIONALLY LEFT BLANK)

CHAPTER 7. PLANNING

SECTION 1. GENERAL

700. 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 and the applicable Air Traffic Organization Service Area 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 on the basis of 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.

SECTION 2. PLANNING STANDARDS

701. PLANNING STANDARDS.

a. Facility Establishment. Airway Planning Standards contain the criteria for the establish-ment 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 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 establish-ment 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 responsi-bility 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 (AJS), National Flight Procedures Office (NFPO), 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. NFPO personnel serve in a team leadership role in developing and recommending improvements to instrument flight rules (IFR) procedures, operational minimums, and associated facilities.

702. DETERMINATION OF OPERATIONAL BENEFITS/IMPROVEMENTS.

a. General. An operational benefit and/or improvement is 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 ft 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 ft 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 NFPO 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 3. SAFETY ANALYSIS

703. 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. NFPO 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 Flight Standards Division-All Weather Operations Program Manager (RFSD-AWOPM) 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 RFSD-AWOPM 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 7400.2, *Procedures for Handling Airspace Matters*, provide FAA personnel with the basic guidance for establishment and justification [see paragraph 709c].

(1) There are a number of operational and environmental situations where visual reference deficiencies exist, and where improve-ments 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 manmade 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 2 miles or less from the runway threshold within 90 degrees of the runway centerline extended. Identification may be hampered by one of the following conditions:

<u>1</u> Overriding Lights. A general preponderance of metropolitan or area lighting located within 2 miles of the circling approach area to the runway.

<u>2</u> False Lights. A configur-ation of non-aviation lighting, underlying the approach surface, which presents to the pilot a false runway identification such as a well-lighted boulevard, expressway, or railroad yard which 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 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 NFPO 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 (table 7-1). 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 7-1. 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 4. AIRWAY PLANNING

704. GENERAL.

a. The primary responsibility for the establishment, amendment, or deletion of airways, RNAV routes, and jet routes rests with the Vice President of System Operations (AJR-0) based on air traffic demand and user requirements. The NFPO and applicable Service Area Flight Procedures Office must participate in airway planning with respect to navigational signal coverage over designated routes, development of 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. The NFPO 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 the NFPO 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 5. TERMINAL PLANNING

705. 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 the NFPO and all other associated lines of business. The NFPO 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 Office 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 RFSD-AWOPM 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 Office 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, 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 chapter 8, section 5. A cover letter must accompany the FAA 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.

706. 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 an airport surveillance radar (ASR) environment where radar service can be provided on a continuous basis. Where radar service is utilized for transitioning to the 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 utilized to identify the point from which holding or a procedure turn is to be executed [see paragraph 214].

(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 VOR or 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 905d(2) and figure 7-4]. Order 8260.3B, Volume 1, paragraphs 287a and 1761 apply.

(6) Transitions to the 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 8260.3B, Volume 1, paragraph 922, and depicted in figure 7-3. 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 3 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 7-1, 7-2, 7-3, and 7-4 depict normal clearance areas with a 2-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 7-1, 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 7-2, and a fix can be established at the OM location in accordance with paragraph 706a(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 7-3, a transition may be established to the localizer course and a procedure turn is not required.

Figure 7-1. Transition to Localizer Fix for PT.

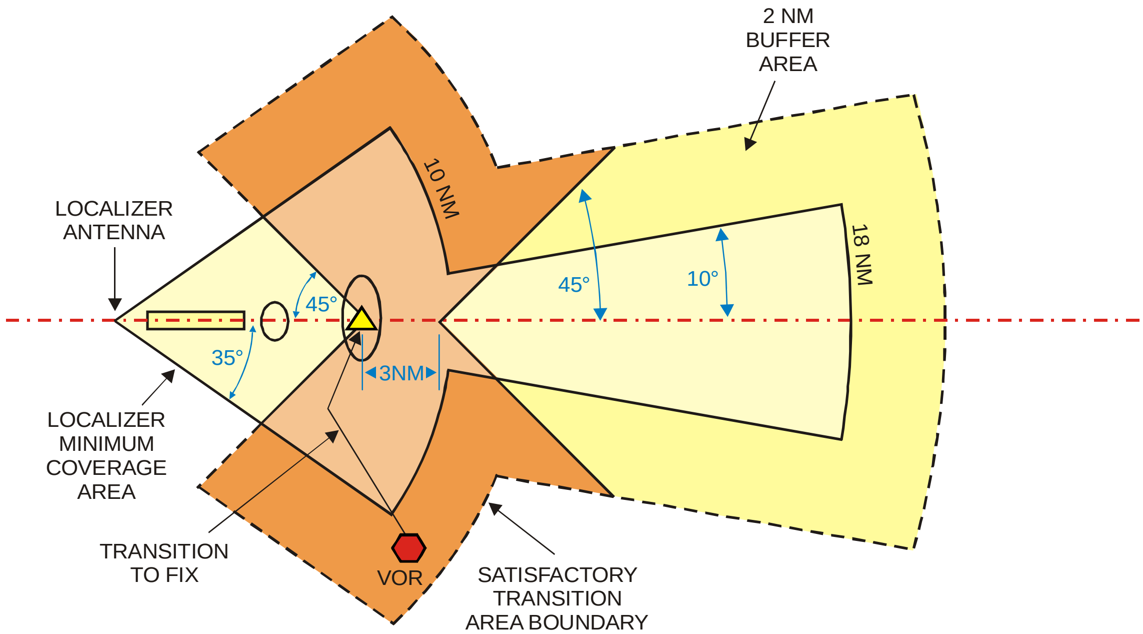


Figure 7-2. Transition to OM for PT.

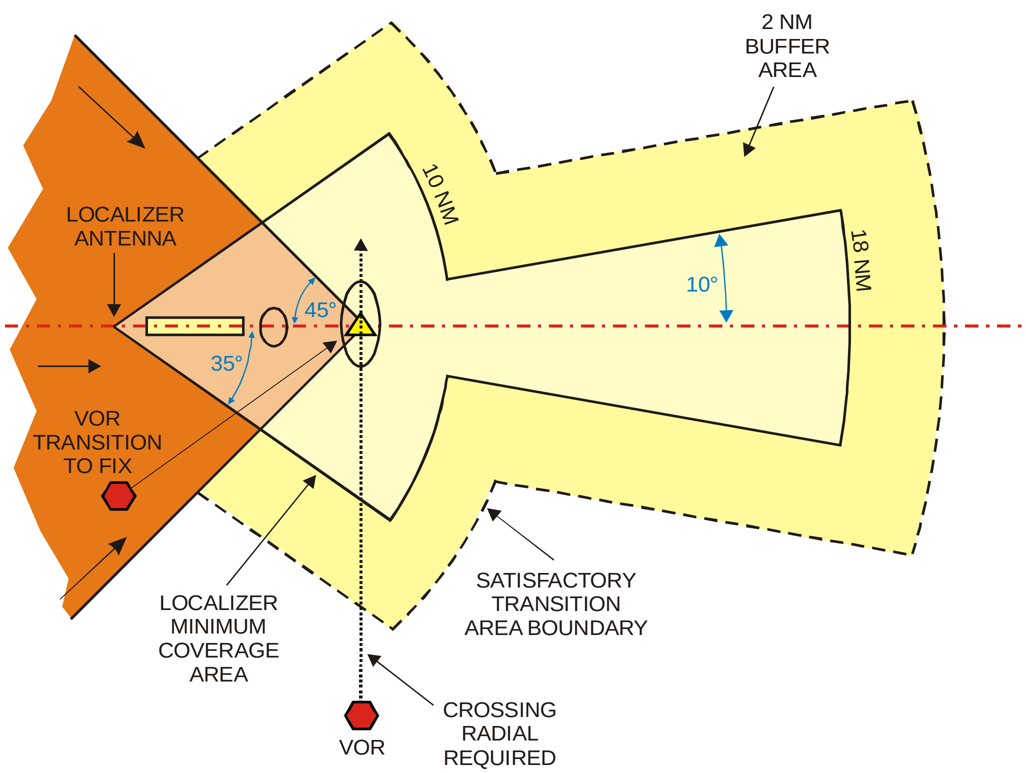


Figure 7-3. Transition to LOC Course (NoPT).

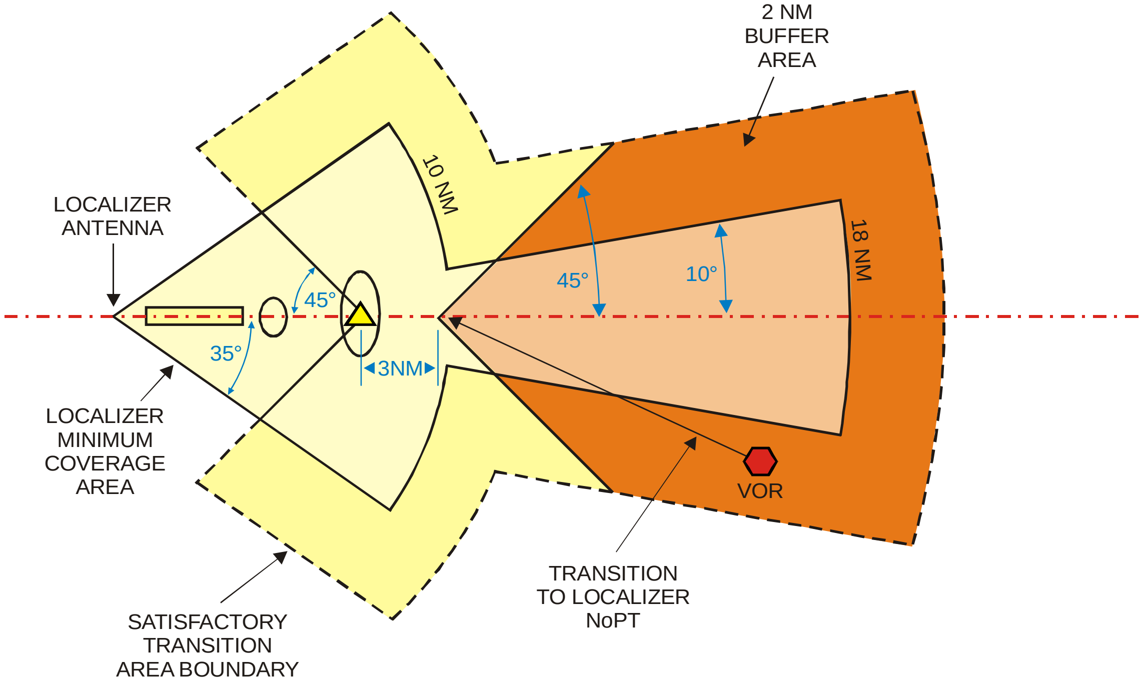
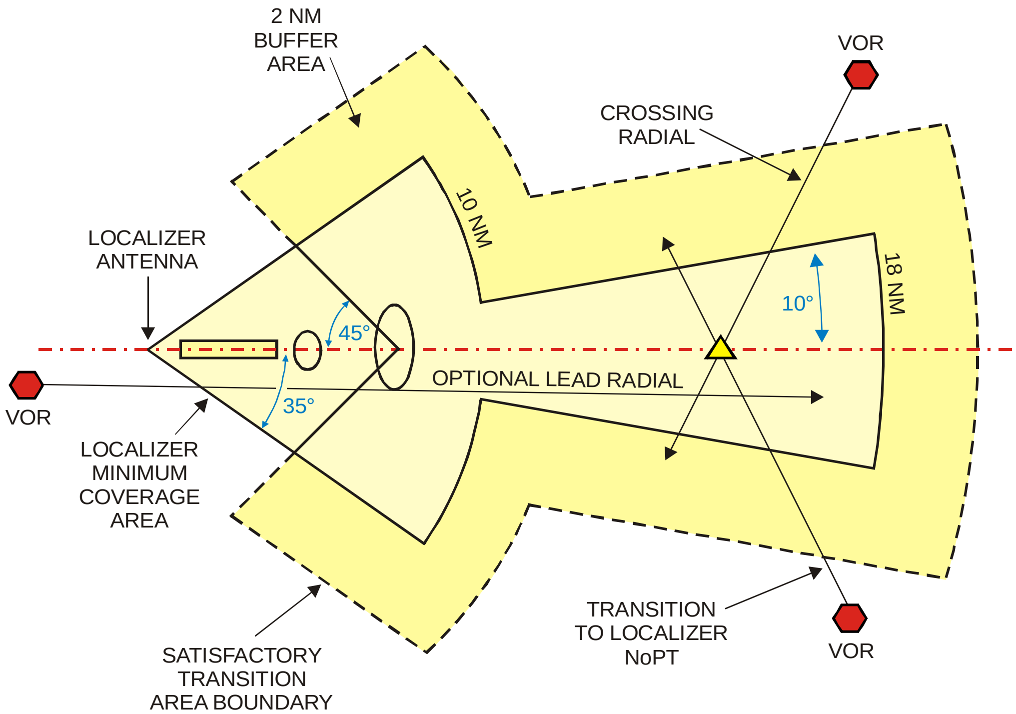


Figure 7-4. Stand-Alone Fix on LOC Course.



(4) Criteria for fix accuracy are contained in Order 8260.3B, 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 706b.

(2) In a non-radar environment where satisfactory transitions can be established in accordance with paragraph 706b, 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 706b 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 807g(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 Office 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 approved 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 NFPO by including an appropriate statement for each location as follows:

(1) Non-Radar Location. Conforms to Order 8260.19**,** paragraphs 706c(1) and (2).

(2) Radar Location. Conforms to Order 8260.19**,** paragraphs 706c(3).

SECTION 6. AIRPORT PLANNING

707. 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 Office personnel should be thoroughly familiar with all airports existing or planned in their areas of responsibility. NFPO 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 RFSD-AWOPM 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 amendments coordinated by the Airports Division should be routed through regional Flight Standards Divisions and applicable Service Area Flight Procedure Office personnel for review and comment. NFPO should develop necessary coordination procedures with Airports Division personnel.

SECTION 7. PRIVATE AID

708. GENERAL.

a. Informal Discussions. Regional Flight Standards and applicable Service Area Flight Procedures Office 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 Part 171 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 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 8. FACILITIES AND EQUIPMENT (F&E) SUPPORT

709. 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 Office staff and the respective regional Flight Standards Division (RFSD). Chapter 1, section 2, Responsibilities, of this order 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. The NFPO 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 NCP.

710.-799. RESERVED.

CHAPTER 8. INSTRUMENT APPROACH PROCEDURES DATA TRANSMITTAL SYSTEM

SECTION 1. GENERAL

800. GENERAL.

a. Forms. Forms in the 8260-series are used for the documentation and publication of instrument flight procedures. The National Aeronautical Charting Office (NACO) 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 the NFPO Quality Assurance (QA) staff for guidance.

b. 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 for 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.

c. Give full consideration to the environmental impact of procedures on local communities. 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 2. FORM USE AND PREPARATION

801. USE OF FORMS.

a. Procedures published under Title 14, Code of Federal Regulations (14 CFR), Part 97. SIAPs, fixed-wing and helicopter, authorized for public use are approved by the National Flight Procedures Office (NFPO) and published as rules in the Federal Register by 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) ILS Standard Instrument Approach Procedure, Form 8260-3 [ILS, TLS, MLS, RNAV (GPS or RNP), and LDA (when associated with a glide slope)].

(2) RADAR Standard Instrument Approach Procedure, Form 8260-4.

(3) Standard Instrument Approach Procedure, Form 8260-5 [LOC, LOC/DME, LDA, LDA/DME, VOR, VOR/DME, VOR/DME or TACAN, NDB, SDF, VOR/DME RNAV, and other nonprecision procedures].

(4) Continuation page of Standard Instrument Approach Procedure, Form 8260-10, used as a continuation sheet for instrument approach procedure forms listed above, and for DF procedures.

c. Special Use Procedures. Special use instrument approach procedures are documented on Form 8260-7. These procedures are developed for individual operators and are issued to the user through Operations Specifications or Letters of Authorization [see chapter 4, section 4].

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 RNAV DPs. Form 8260-15D serves as a continuation sheet for DPs. Refer to Order 8260.46, *Departure Procedure (DP) Program*, for instructions.

802. 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 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 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 DF procedures on Form 8260-10, enter "**Emergency DF**" and leave the Part 97 subpart blank.

b. Appropriate Part 97 subparts for individual types of procedures are:

(1) 97.23 VOR, VOR/DME, VOR or TACAN, and VOR/DME or TACAN.

(2) 97.25 LOC, LOC/DME, LDA, LDA/DME, LDA w/GS, SDF, and SDF/DME.

(3) 97.27 NDB and NDB/DME.

(4) 97.29 ILS, MLS, TLS, GLS, WAAS PA, and MLS/RNAV.

(5) 97.31 RADAR.

(6) 97.33 RNAV (includes VOR/DME RNP, LNAV, LNAV/VNAV, 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 NDB or compass locator is established at an ILS outer marker site, the individual ILS and NDB procedures should be developed in a manner that will permit combined charting, provided 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. 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.

803. COURSE AND DISTANCE INFORMATION.

a. Application. Assigned magnetic variation must be applied to terminal routes as follows [see paragraph 857n]:

(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: Variation of the airport/heliport upon which the SIAP is based must be used for all RNAV routes on the procedure.

(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 NACO.

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, 1,100.49 ft becomes 1,100 ft, while 1,100.50 ft becomes 1,101 ft. Similarly, 131.49 degrees becomes 131 degrees, while 131.50 degrees becomes 132 degrees.

804. COMMUNICATIONS DATA.

a. Communications requirements and frequencies for inclusion on instrument approach procedures charts will be provided by NFDC in accordance with Order 7910.2, *Frequencies Listed on Instrument Approach Procedure Charts*.

b. Where specific local communication requirements exist for published instrument approach procedures, and where these data are not currently charted, enter one of the following under "Additional Flight Data:"

(1) Where approach control service is provided by ARTCC through a remote site: **"Chart Indianapolis Center frequency."**

(2) Where approach control service is provided through the controlling FSS by LRCO or RCO. The controlling FSS will be indicated: **"Chart Indianapolis Radio LRCO (RCO)."**

(3) Where the primary remote altimeter source is obtainable from an

AWOS/ASOS, chart the location and frequency: **"Chart Flippin AWOS-3, 134.875."**

805. 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 paragraph 404o.

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 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.

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 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 855h. 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.

Note: Similar precautions may be necessary for MLS. Evaluate each situation and take the appropriate action.

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, 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 404i and 851a(3)]. 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 852a(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 302 CW 096."

When a course reversal is over a fix:
"Chart planview note: NoPT for arrival at NICOL on V-244 Westbound, V-230 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, 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.

h. Lead Radials. In addition to the angle of interception requirements of TERPS Volume 1, paragraph 232a(1), a 2-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 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 852b(2).

(4) Develop intermediate segments for all IAPs except "hold-in-lieu-of-PT" and "PT No-FAF" procedures. Where intermediate segments have been established, the intermediate fix (IF) will be defined on the procedure in the planview.

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.

806. TERMINAL FIXES.

Name terminal fixes in accordance with paragraph 264 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 5-alpha character non-pronounceable name. To distinguish CNFs from conventional reporting points, fixes, and intersections, enclose the name in parenthesis; e.g., (WFWBG) on 8260-series forms other than the 8260-2.

b. Audit Trail. List terminal procedures using a fix in the "Remarks" section of the 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 -7 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 3-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,** when it first occurs on the form, satisfies charting requirements**.** For example, entering “ARNET LOM/INT/ABC 8.53 DME” or “NIXON INT” once in the Terminal Routes section, and thereafter entering the fix name only wherever else it occurs on the form ensures that the fix will be charted correctly on both the planview and the profile sections of the approach chart. **For RNAV**

procedures, describe a fix by name only. NACO 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."**

Example: (Fix name: DAVEE INT/16.00 DME) **"CLIMB TO 3600, THEN CLIMBING RIGHT TURN TO 4000 VIA 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 5-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. ATD References. Include ATD fix values with respect to the MAP on all named and unnamed (VDP) fixes within a RNAV final approach segment [see paragraph 857r 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 final approach fix (FAF).

807.-809. RESERVED.

SECTION 3. CERTIFICATION, PROCESSING, AND REVIEW

810. GENERAL.

Certifying, processing, and reviewing instrument approach procedures must be accomplished as outlined in this section.

811. CERTIFICATION AND DISTRIBUTION OF SIAPs.

Certification of instrument approach procedures must be accomplished on the reverse side of the appropriate 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. A "No" indicates that only the items listed in the "Changes" block were reviewed [see paragraphs 241a(2) and 813c].

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," "Proposed," "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) Proposed Dates. Proposed dates may be used for any SIAP, **provided the procedure does not require any en route charting changes.** This includes SIAP originals, amendments, and cancellations. Proposed dates must not be used for departure procedures or STARs. Enter a proposed date as: "P12/08/02." If proposed SIAPs are rescinded, NFDC must be notified to take appropriate action in the Transmittal Letter (TL).

(3) 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."**

(4) Hard Dates. When a specific effective date is required; e.g., facility Mag Var rotation, enter a hard date as **"12/08/02."** Hard dates require updating the NFDC database 56 days in advance of charting. Hard dates are not to be used as an "easy to use" option. Where a hard date is required for reasons other than a magnetic variation change, request a deviation from policy as detailed below.

(5) Deviations. Deviations from the previous guidelines require agreement between the NFPO, NACO, and NFDC [see Order 8260.26]. AFS-420 must be informed of all coordinated deviations.

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 FSDO offices 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 860e must be included in all procedure packages that are submitted for coordination. Coordinate procedures with ATA if the airport is served by scheduled air carriers. Coordinate all Part 97 SIAPs and all DPs with ALPA. Coordinate with Allied Pilots Association (APA) for procedures at airports used by American Airlines. Coordinate helicopter procedures with Helicopter Association International (HAI).

This coordination action is required to provide advance notice to the user organizations that a change to Part 97 is being initiated. These instrument procedures will be posted on NFPO web site at: http://www.webavn.jccbi.gov/acifp.asp. 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 the NFPO; and all comments must be considered before the procedure is forwarded for publication. Valid user comments, which cannot be reasonably accommodated by the NFPO, should be referred to AFS-420 for resolution prior to submission of the procedure for publication [see also paragraph 421].

(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 AJW-33 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, *Establishing and Scheduling Instrument Approach Procedures Effective Dates*, 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. "Proposed" procedures forwarded under Order 8260.26, will be flight checked at a later date.

(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 8260-7.

g. Developed By. Enter the name, branch, signature of the person responsible for developing the IFP, and the date developed. Authority to sign in this block is assigned to the NFPO personnel certificated by AJW-3 as a procedure development specialist. The signature in this block certifies that:

(1) The developer used the most current and accurate data in developing the SIAP.

(2) The procedure was developed in accordance with appropriate policies, directives, standards, and criteria [see special instructions for Form 8260-7 in paragraph 872].

h. Approved By. Enter the name and signature of the NFPO Manager, or his/her designated representative, and the date signed. Signature in this block certifies that the procedure:

(1) Conforms to procedures development policies, 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.

812. CANCELLATION OF INSTRUMENT APPROACH PROCEDURES.

Cancellation of instrument approach procedures must be accomplished on the same form number as required for documentation of the 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** ___________" (NFDC 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.**"

813. MINOR REVISIONS TO SIAPs.

Minor changes to instrument approach procedures may be made by an abbreviated 8260-series form amendment. A T-NOTAM must be used to be followed by an abbreviated 8260-series form amendment. When processing an abbreviated 8260-series form, apply the following:

a. Increment the amendment number using an alphanumeric format; e.g., AMDT 3B.

b. Update the 8260-series form to reflect all previous P-NOTAM amendments not yet incorporated on the form.

c. A complete review of the procedure is not required; therefore, check "No" in the "All Affected Procedures Reviewed" box of the form.

d. **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, e.g., 'MDA changed from 820 to 880,' and the reason, e.g., 'New obstacle found in final segment.'

e. **Enter "Routine"** as the required effective date.

f. Coordinate changes with appropriate organizations, as necessary.

814. PROCESSING.

When the NFPO quality review is completed, the procedure must be forwarded directly to NFDC and NACO for publication. Distribution must be in accordance with table 8-1. Additionally, forward a copy to users specified in paragraph 811d. [Refer to paragraph 872d for Special procedure distribution channels].

815. NFPO REVIEW OF SIAPs AND CHARTS.

The NFPO must review and check Forms 8260-3/4/5/10, and the associated aeronautical charts published by NACO for variations from information submitted for publication. If any variance or charting discrepancies are identified, see paragraph 223 for action to be taken.

816. NFPO ACTION.

a. Forms Routing. Table 8-1 provides easy routing reference for NFPO forms processing. Specific directive references are included for further guidance.

b. The NFPO must process Army forms as required by Order 8260.15, *U.S. Army Terminal Instrument Procedures Service*.

c. The NFPO must process U.S. Air Force procedures using FAA forms as required by Order 8260.32, *U.S. Air Force terminal Instrument Procedures Service*.

TABLE 8-1.

FAA FORM	NFDC	AFS-460	FPO	ARTCC	ATCT	ATA, ALPA APA. AOPA NBAA, HAI	NFPO Work File
8260-1 (Except Army)	The NFPO originates. Send to AFS-400 thru AFS-460. AFS-460 maintains Original Copy. A copy is forwarded to NFPO.						1
8260-1 (Cancellation)	The NFPO or AFS-400 cancels through AFS-460, giving date and reason. AFS-460 maintains Original Copy. A copy is forwarded to the NFPO.						
8260-2 (except Army)	Orig *Regional AWO distributes to users.		1	1	1	*	1
8260-3/4/5/ 15A/B/C 8260-10 (Con-tinuation)	Orig.		1	1	1	1	1
8260-10 (DF)	1		1	1	1 to DF control facility		Orig
8260-7	Distribute as specified in paragraph 444						
8260-9		If Special	1				Orig
8260-16	Orig * For Off-Airway routes. Applicable Service Area FPO distributes to users.		1	1		*	1

ARMY: 8260-1, 2/9/11/ 12/13/20/21/22/ 23/24	The NFPO originates. Send package to USAASA or USAASDE. 1	1
USAF: 8260-2/9/11/12/ 13/20/21	1 Orig package to the Major Command TERPS Office (MAJCOM/DO)	1
7100-4	STAR package returned thru the Applicable Service Area ATC	1
Substitute Routes Letter Format	ORIG	1

817.-819. RESERVED.

SECTION 4. RESERVED

820.-829. RESERVED.

SECTION 5. FLIGHT PROCEDURES STANDARDS WAIVER, FAA FORM 8260-1

830. PREPARATION OF FAA 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 NFPO, and forwarded to the Flight Technologies and Procedures Division, AFS-400, through the Flight Procedure Implementation and Oversight Branch, AFS-460. See figures 8-1 and 8-2 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 8260.3B, Volume 3, paragraph 3.9.1."** Request only ONE waiver of standards on each form, and address only one standard per waiver request. 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 ft."**

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.

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.

f. Item 5: How Relocation or Additional Facilities will Affect Waiver Requirement. Enter statements in this item to indicate consideration has been given to relocation, programming, or reprogramming action to negate the requirement of a waiver of standards. Insertion of NA (not applicable) in this item leaves a question as to whether any consideration has been given to this item.

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. The NFPO Manager or his/her designated representative, must sign and date all waiver requests, and forward to AFS-460 for further action. The waiver package 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: Continuation. The top of the second page is a continuation sheet for additional information for items 2 through 6 on the first page of the form.

j. Item 9: 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.

(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 the NFPO, and makes further distribution as necessary.

k. U. S. Army Waivers. The NFPO completes Form 8260-1 per the instructions provided in this order, as supplemented by Order 8260.15, *U.S. Army Technical Instrument Procedures Service*. U.S. Army procedures requiring waivers, for joint civil/military use, are sent to AFS-460 per the provisions in paragraph 830h.

l. Cancellation of a waiver may be initiated by the NFPO 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.

TERPS Change 4 permits multiple DME fixes.

(Signature) ______________________

(Title, Office Symbol)______________

831.-839. RESERVED.

Figure 8-1. Flight Procedures Standards Waiver.

US Department of Transportation
Federal Aviation Administration

FLIGHT PROCEDURES STANDARDS WAIVER

FLIGHT STANDARDS USE ONLY
CONTROL NO:

1. Flight Procedure Identification:
Phoenix, AZ (PHX)
Sky Harbor Intl.
BARGN RNAV DEPARTURE

2. Waiver Required and Applicable Standard:

Fly-Over Waypoint Minimum Turn Distance. FAAO 8260.44, Paragraph 9.11.1, Table 2

3. Reason for Waiver *(Justification for nonstandard treatment)*:

Waiver required to evaluate minimum leg length when a (DF) leg is flown following a Fly-Over Waypoint .

Waypoint placement required for terrain avoidance and environmental concerns.

4. Equivalent Level of Safety Provided:

1. Satisfactorily passes lead carrier (America West) flight simulator.
2. DF segment passed AFS-420 turn analysis program evaluation for minimum required leg length
3. Passed FAA flight inspection evaluation.
4. AFS-420 turn assessment attached.

5. How Relocation or Additional Facilities Will Affect Waiver Requirement:

N/A - RNAV procedure

6. Coordination With User Organizations *(Specify)*:
AJW-321:________
AJW-328________

7. SUBMITTED BY

DATE:	Office Identification:	Title:	Signature:
03/28/2007	**AJW-32**	**Manager, National Flight Procedures Group**	**John Q. Smith**

FAA FORM 8260 - 1 / July 2003 (computer generated)

Figure 8-2. Flight Procedures Standards Waiver - Continuation.

8. CONTINUATION
Comments:

9. AFS ACTION	☒ Approved ☐ Disapproved ☐ Not Required

Comments:

Approved based on the equivalent level of safety provided in Block 4.

Date:	Routing Symbol:	Signature:
04/30/2007	**AFS-400**	**JAMES T. JONES, Manager** **Flight Technologies and Procedures Division**

SECTION 6. RADIO FIX AND HOLDING DATA RECORD FAA FORM 8260-2

840. INTRODUCTION.

a. General. All civil and military named fixes and holding patterns must be documented on FAA Form 8260-2. Navigation facilities do not require this documentation unless holding is established [see paragraph 872b(1)]. FAA Form 8260-2 may be initiated by the National Flight Procedures Office (NFPO), military organizations, or approved non-Federal procedure developers. FAA Form 8260-2 action can be initiated by Air Traffic facilities using the 8260-2 worksheet [see appendix 3]. 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 the NFPO for processing. When initiated by military organizations, the forms are coordinated with the parent FAA air traffic facility and then (USAF: See applicable Air Force directives for processing) forwarded to the NFPO for processing. WHEN INITIATED BY NFPO, THE INFORMATION MUST BE COORDINATED WITH THE APPROPRIATE AIR TRAFFIC FACILITIES. The forms must be distributed in accordance with table 8-1.

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 7350.7, *Location Identifiers*.

d. Fix Name Change. A fix name change requires a revised 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) Fix names must be changed whenever a fix is moved 5 NM or more, unless operational requirements dictate otherwise.

841. PREPARATION OF FAA 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 264 and 841d(2)(a)-(d). 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.

EXAMPLES:

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 U.S. For offshore fixes at or inside the U. S. 12-mile territorial limit, name of the nearest state must be used. If the fix is outside the U. S. 12-mile territorial limit, use OA for Offshore Atlantic, OG for Offshore Gulf of Mexico or OP for Offshore Pacific.

c. COUNTRY. Enter the two-letter identifier of the country in which the fix or navigation facility is located.

d. 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 (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 -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."

e. 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 when a compulsory reporting point is established, moved, or canceled.

f. FIX.

(1) TYPE. List the fix type(s) for the various uses of the fix. If the -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 8260-2 will be generated. TYPE OF ACTION will have CANCEL checked. Complete the AJW-3 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 8260-2s for fixes associated with the procedure.

(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
LOCDME
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 267. 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 ft below the lowest published procedural altitude at the fix. Values are entered in whole feet.

(k) MAA. See also paragraph 269. 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

g. 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 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.

(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 8-3].

(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 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.

(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, Holding Pattern Criteria, 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 OBSTRUCTONS.

(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, 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. If holding is not specified, ensure that the aircraft can hold on the missed approach course leading to the fix and document the controlling obstruction. Where missed approach is direct to the clearance limit, a holding pattern must be established.

(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, IAW 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 Knots, 200/230 Knots for holding patterns restricted to 175 KIAS is used, the procedure must be annotated with the maximum airspeed allowed to conduct a climb-in-holding [see paragraph 856f].

EXAMPLE:

PAT 1, VOR RWY 19, KANSAS CITY, MO, KANSAS CITY INTL.

h. REMARKS. The foregoing instructions contain several uses for this section. Additional uses are as follows:

(1) MINIMUM TURNING ALTITUDE (MTA). When an MTA is required by TERPS, Volume 1, paragraph 1714(c), enter the MTA in the REMARKS section.

EXAMPLE:

MINIMUM TURNING ALTITUDE(S): AIRCRAFT PROCEEDING MLD V465 JAC V330 IDA, OR MLD V465 JAC V520 DBS, OR IDA V330 JAC V520 DBS, MUST MAINTAIN 15800 OR HIGHER UNTIL ESTABLISHED ON CENTERLINE OF V330 OR V520 WESTBOUND.

(2) PRECIPITOUS TERRAIN. Enter a remark stating precipitous terrain evaluation completed.

EXAMPLE:

PRECIPITOUS TERRAIN EVALUATION COMPLETED.

(3) OTHER REMARKS. Enter remarks necessary to clarify fix make-up, holding patterns, etc.

i. FIX USE AND FACILITY AND PATTERN CHARTING. 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:

DP - Used for SIDs and ODPs.
EN ROUTE - Used for airways, jet routes, Q routes, T routes, etc.
IAP - Used for standard and special approach procedures.
OTHER - Used for non-procedure fix uses, e.g., ATC Coordination Fix, Pitch/Catch Point, Restricted Area Entry/Exit Point, Sub-Route, etc.
STAR - Used for standard terminal arrival.

j. 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.

k. 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 841a.]

l. RECORD REVISION NUMBER. Enter the revision number. When the 8260-2 is an original, enter “ORIG.”

m. DATE OF REVISION. Enter the same date used in “Developed By.” See Order 8260.19D, paragraph 841q.

n. 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 3,000 FT TO 4,000 FT CONCURRENT WITH JACKSON HOLE, WY, VOR/DME RWY 36, AMDT 3

o. ATC COORDINATION. Enter the date, air traffic facility ident and type, and name of the ATC individual that coordinated the fix request.

p. INITIATED BY. For NFPO or ATC developed fixes, leave blank. For all other developed fixes, enter the date, organization/ company, and name of the individual initiating the fix.

q. DEVELOPED BY. Enter the date, office, and name of the NFPO specialist that completed or reviewed the fix.

r. NFPO APPROVAL. Enter the date, office, name, and signature of the NFPO branch manager or his/her delegated representative, approving the fix.

s. DISTRIBUTION.

(1) The NFPO must distribute the approved 8260-2s for instrument procedure fixes, including military fixes as defined in table 8-1.

(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 U.S. Army fixes, distribute 8260-2s IAW Order 8260.15, United States Army Terminal Instrument Procedures.

(4) The NFPO will send the original 8260-2s on Specials to the NFDC when notified that the Special has been approved by AFS-460.

842.-849. RESERVED.

SECTION 7. COMPLETION OF FAA FORMS 8260-3/5

850. 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, 8260-7, and 8260-10, which is covered in the succeeding section. Guidance is referenced to each separate area of the forms.

851. 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 805j].

(2) Enter intermediate fix designator "(IF)" in the "FROM" column after the fix satisfying the requirements of the parenthetical intermediate fix [see paragraph 805i(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 805g(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 851b(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, 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 1.0)**. Use a leading zero for RNP values less than 1.0; e.g., **(RNP 0.50)** [see paragraph 499i].

(c) The landing threshold point (LTP), <u>OR</u> 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 8260.52, Chapter 4], 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 12. 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. Enter the actual magnetic course to the hundredth of a degree, and distance to the hundredth of a mile. NACO 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 857v].

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 852d(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 857t]. A standardized 3-degree descent angle must be used where feasible.

852. 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 ft. within 10 mi. 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) Enter "NA" following "PT" when a course reversal is not authorized.

(4) Leave line 1 blank 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-355 inbound, 4,300 ft within 15 mi. 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, 3,000 ft 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, 5,000 ft, 257.28 (I-XYZ) inbound, 4,500 ft. 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 ft, 257.28 (I-XYZ) inbound, 4,500 ft. 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 3 Stepdown Fixes in outbound segment of the Teardrop)</u>**:**

Teardrop R-220 (ABC VORTAC) (IAF) outbound, MANNY INT 10,000 ft MOOEE INT 9,200 ft. JACCK INT 7,500 ft to PEEPP INT 6,800 ft, R-257.28 (ABC VORTAC) inbound, 6,000 ft 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 (IAF) outbound, MANNY INT 10,000 ft. MOOEE INT 9,200 ft JACCK INT 7,500 ft to PEEPP INT 6,800 ft, R-257.28 (ABC VORTAC) inbound, 6,000 ft. to BOYZS INT.

(2) Where a SIAP requires a holding pattern in-lieu-of-PT [see TERPS Volume 1, paragraph 234e], establish the direction of holding based on the inbound course as shown in figure 8-2. 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:

Hold SE OMEGA LOM, RT, 313.09 inbound, 1600 ft. in lieu of PT (IAF).

Hold W FIXXR, LT, 103.28 inbound, 3,000 ft in lieu of PT (IAF) (HF) (40E) (43C).

Figure 8-3. Holding Pattern Directions.

Magnetic Course (Inbound)	Holding Pattern Direction (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 holding pattern at the FAF, enter the fix/facility from which the profile is to start. The profile must include the intermediate fix. If required for clarity, the profile may be extended to include all fixes established on the final or intermediate course.

Profile starts at STING.

c. Line 3.

(1) Enter the final approach course (FAC) on all procedures. Enter the exact electronic course to a hundredth of a degree. NACO will chart to the nearest whole radial/course for publication. The FAC is determined as follows:

(a) ILS, MLS, LOC, SDF, and LDA procedures - enter the official course alignment based on antenna location and orientation.

(b) RNAV procedures - enter the course established by NFPO computation. For RNAV (RNP) 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 857i]. If other than the computed value, enter both values in the Remarks section of the Form 8260-9 [see paragraph 860c(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/MLS 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 852f(3)].

(a) For RNAV procedures, enter the named PFAF/FAF.

Note: For LPV and LNAV/VNAV procedures that do not contain LNAV minima, leave the "FAF" portion blank [see paragraph 852f(3)].

(b) Vertically guided procedures will normally have the PFAF collocated or within 1 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:

PFAF: NACON

Note: The PFAF distance to the FAF will be calculated and charted by NACO.

(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 NoFAF 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 805i(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, should be coincident with the glide slope when possible. Where the fix altitude is not within 20 ft of the glide slope, annotate it for LOC 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.

(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 852b].

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 852d(2) above, 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 stepdown fix, enter the lowest MDA at the stepdown fix authorized for aircraft that cannot receive the stepdown fix. If an MDA increase is required when a remote altimeter setting is used, the stepdown fix should 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 Category II and III procedures, enter distance in feet to the threshold from the inner marker (IM) and 100-ft height above touchdown (HAT) points.

(2) On Categories I, II, III procedures, enter distance in feet from the threshold to a point abeam the glide slope (GS) antenna (for ILS), and abeam the elevation antenna (for MLS). 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-ft increment. The GS/GP intercept point is considered to be the PFAF for vertically guided procedures. If more than one GS/GP intercept altitude is necessary to support ATC operations, the GS/GP intercept point closest to the threshold is the PFAF and the additional intercept altitudes will be specified in a profile view note. Document the additional glidepath intercept information in the Notes block as follows:

Chart profile note: *When assigned by ATC, intercept glidepath at 5000.

Chart profile note: *When assigned by ATC, intercept glidepath at 5000 or 6000 or 7000.

Note: At locations where these additional glidepath intercept altitudes have been established, a "gross error" check altitude will be published at the fix like is done at the OM/PFAF [see paragraph 852f(4)].

(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 and at additional fixes identified as glidepath intercept points [see paragraph 852f(1)]. 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 TERPS 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/MLS/TLS 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**.** For facilities flight inspected under Order 8240.47, the RDH is the TCH, unless ARDH is used. 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 TERPS Volume 1, table 18, 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 AVNIS/ AIRNAV as the official data source***.**

(3) For RNAV procedures, state whether the 34:1 obstacle assessment [see TERPS Volume 1, paragraph 251] 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. When the MSA facility is an LOM, enter only the identification and type of facility. 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 than 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 ft 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.

853. TAKEOFF AND ALTERNATE MINIMUMS.

a. Takeoff Minimums*.* Takeoff minimums will be documented on Form 8260-15A in accordance with Order 8260.46, *Departure Procedure (DP) Program* [see paragraph 801d].

b. Alternate Minimums.

(1) To qualify for alternate minimums, an airport must have weather reporting at the airport and the weather must be reported on Service A weather sequences. Commercial operators who have an **approved weather reporting service** may be authorized alternate minimums without the requirement for Service A hourly aviation reports.

Note: Alternate minimums ***are*** *authorized on* ***RNAV (GPS) and RNAV (RNP) SIAPs****.*

(2) 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/MLS is monitored, and the GS/GP provides intercept and descent guidance. However, this does not apply to **nonprecision SIAPs** or the LOC/AZ portion of an ILS/MLS SIAP; i.e., deny alternate minimums on a nonprecision SIAP if the facility is not monitored.

(3) 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: **"Continued on Page 2"** in the Alternate Minimums block.

(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 855f(4)]

(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/MLS and for the LOC/AZ-only 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 1/2
@ CAT D 800-2 1/2

854. MINIMUMS.

a. General. Enter minimums in boxes provided. When dual minimums are authorized, additional boxes may have to be constructed. Enter straight-in minimums where rate of descent and alignment criteria are satisfied. 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 authorizing straight-in minimums, publish circling minimums only.

b. When a 10-mile procedure turn *(or greater) is established,* Category A, B, C and D minimums may be authorized.

c. When a 5-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. Coordinate with the airport sponsor/operator to determine what categories of aircraft use the instrument approach procedure(s). Where a specific category of minimums will not be authorized, enter **NA** in the VIS column for each category not published. See Order 8260.3, Volume 1, chapter 3.

f. Make no entry in the Category E boxes*,* except where a valid military requirement exists. Use TERPS table 10 to establish Category E minimums. However, these minimums must not be lower than civil Category D minimums. Do not authorize ILS Category II or III minimums for Category E military aircraft.

g. Types of Minimums. The types of minimums for non-RNAV instrument procedures must be entered as **"S- (Runway No.)"** for straight-in minimums, **"Circling"** for circling minimums, and **"Sidestep (Runway No.)"** for sidestep minimums [see paragraph 405h].

(1) For COPTER procedures, on Forms 8260-3/4/5/7, 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 854g(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. Label minimums for current standalone 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 terms LPV and LNAV/VNAV. Insert the term “**MDA**” after the terms LP and LNAV. **"Circling"** for circling minimums, and **"Sidestep (Runway No.)"** for sidestep minimums [see paragraph 405h].

(3) For RNAV (RNP) procedures, use the minima blocks normally reserved for dual minimums and enter **“Special Aircraft and Aircrew Authorization Required”** in the title line. Establish minimums for RNP 0.3 as specified in Order 8260.52. When lower RNP values are necessary to achieve the lowest possible minimums, up to three additional lines of minima can be established. The lowest **DA** will be the top line of minima followed by the next lowest **DA** 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). Circling and side-step minimums are not authorized for RNP.

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.

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 TERPS Volume 1, chapter 3. RVR authorized on runways to which straight-in minimums are published must be entered in feet; e.g., **4,000, 2,400, 1,800,** 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) When an RVR 1800 is authorized under Order 8400.13, Procedures for the Approval of Special Authorization Category II and Lowest Standard Category I Operations, enter a separate line of minima immediately below the standard minimums. Separate them with the heading "SPECIAL AIRCREW AND AIRCRAFT CERTIFICATION REQUIRED."

(2) See paragraph 404 of this order for guidance on using RVR on adjacent runways.

(3) When Order 8260.3, Volume 1, paragraph 251, requires visibility to be limited to ¾ mile or 1 mile because of 20:1 or 34:1 surface penetrations, a note is required to prevent helicopters from applying 14 CFR Part 97.3(d-1) 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 1,200 ft RVR." Use: **"Chart Note: Visibility Reduction by Helicopters NA."**

j. HAT/HAA.

(1) HAT. Enter height above touch-down zone elevation 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 857p and 858. When evaluating host nation procedures, where TDZE is not available, use runway threshold elevation to determine HAT. If neither is 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. Include Category II/III minimums when authorized in the NOTES section immediately below the MINIMUMS boxes. Establish only one set of Category II minimums in the 100-ft to199-ft range with the applicable RVR established by TERPS criteria. 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 ft but no lower than 100 ft above touchdown. 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 radio altimeter (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) ***<u>"Category II ILS Special Aircrew and Aircraft Certification Required</u>*** **S-ILS 32L: DA 756 MSL, 104 RA, RVR 1200, HAT 100; CAT A, B, C, D."**

Note: If a Category II procedure is developed under Order 8400.13, that is lacking ALSF and/or TDZ/CL lighting systems, enter the following in the NOTES section for publication on the approach chart:

"CAT II Chart Note: Procedure does not meet ICAO standard for ALSF/TDZ/CL lighting systems. Authorization to conduct this approach requires specific OpsSpec approval or LOA for this runway."

(2) ***<u>"Copter ILS Category II - Special Aircrew and Aircraft Certification Required; 104 RA."</u>***

(3) ***<u>"Category III ILS Special Aircrew and Aircraft Certification Required.</u>*** **S-ILS-32L: CAT IIIa RVR 700; CAT A, B, C, D. CAT IIIb RVR 600; CAT A, B, C, D. CAT IIIc NA."**

l. Dual Minimums. Enter dual minimums, when authorized. Do not publish dual minimums unless a 60-ft 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 404.

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:

<u>1</u> 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 ft, and all visibilities 1/2 mile."** Use this Note also when visibility is affected in ALL categories; apply the greatest visibility increase.

<u>2</u> Where precision and non-precision 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 ft and all visibilities 1/4 mile; increase all MDAs 60 ft and all visibilities 1/2 mile."**

<u>3</u> Where precision and non-precision 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 ft and visibility CAT D 1/4 mile; Increase all MDAs 60 ft and visibility CATs C and D 1/2 mile."

Note: CAT A is not affected until the HAT is more than 880 ft; CAT B is not affected until the HAT is more than 740 ft.

(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 w**ithout** 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 854l(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, paragraph 288c(4)(c)], 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. The NFPO 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 150/5340-24]. 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, use: **"Chart note: Procedure NA at night."** See also paragraph 854m(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 required by TERPS Volume 1, paragraph 251, use one of the following: **"Chart note**: **Procedure NA at night;"** or **"Chart note: Straight-in minimums NA at night;"** or **"Chart note: Circling NA at night;"** or **"Chart note: Circling to RWY XX NA at night."**

(h) When use of the VGSI is required to mitigate the requirement in TERPS to light an obstacle that penetrates the visual assessment area 20:1 OIS, thus permitting night IFR operations, use one of the following: **"Chart note: When VGSI inop, procedure NA at night;"** or **"Chart note: When VGSI inop, straight-in/circling RWY XX procedure NA at night;"** or **"Chart note: When VGSI inop, circling RWY XX NA at night."**

(3) Inoperative Components and Visual Aids. The Inoperative Components and Visual Aids Table advise 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 1/4 mile."** Where the note applies equally to both sets of minimums, do not specify the minimums.

(4) Weather Reporting / Altimeter Setting.

(a) In accordance with TERPS paragraph 122d, 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 ft, and all visibilities 1/2 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 854l(1)(a)1 and 2].

(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 ft, and all visibilities 1/2 mile."**

(d) When an altimeter setting is provided at **uncontrolled airports**, use standard notes described in paragraph 855e.

(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) Round part-time altimeter adjustment values to the next higher 20 ft increment when publishing a note to increase all MDAs by a specified amount. For example, if the adjustment value is 202.35 ft, specify to increase all MDAs by 220 ft.

Note: Use a part-time remote altimeter setting adjustment when determining descent gradient from a stepdown fix in final ONLY if used to determine the lowest landing minimums.

(5) Circling Conditions and Restrictions. 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 NE 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."**

(6) ILS restrictions. Where flight inspection establishes a restriction to the ILS approach, a facility 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 FDC 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, chapter 15, establish a restriction for autopilot coupled approach 50 ft above the point (MSL) where the out-of-tolerance condition exists. Use: **"Chart note: Autopilot coupled approach NA below 540."**

(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."** When circling is authorized, but the LOC procedure associated with the ILS is "NA," enter the following in the NOTES section: **"Chart note: Circling requires descent on GS to CMDA."**

(7) Simultaneous Approaches. Instrument approach procedures, which meet the requirements for simultaneous approaches, must be annotated as to which runways are authorized for simultaneous operations. This information will be entered in the NOTES section. For example, if simultaneous approaches are authorized to runways 27L and 27R, **each** instrument procedure must refer to the other instrument procedure; e.g., the following would be entered in the NOTES section: **"Chart note: Simultaneous approach authorized with RWY 27R"** (to be noted on RWY 27L SIAP). Additionally, simultaneous operations require the ILS procedure to be flown, so if a Localizer procedure is also published on the chart, include the following in the NOTES section: **"Chart note: LOC procedure NA during simultaneous operations."**

(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, Air-to-Ground Radio Control of Airport Lighting Systems. AC 90-42, Traffic Advisory Practices at Airports without Operating Control Towers, 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 NACO SIAP charts by the use of negative symbology. NACO obtains information for adding the symbology to SIAPs from NFDC's National Flight Data Digest (NFDD). AJR-32 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 8260-7. 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 854m(1) and (2). Use: **"Chart note: Procedure NA at night."**

855. NOTES.

Note: See also paragraphs 252, 404, 804b, 805f, 853b, 854i, 854k, 854l, 854m(1) through (13), 871b and d, and 872g.

a. General. Data entered in this section of Forms 8260-3/4/5/7 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."**

b. Note Restriction. SIAPs must NOT contain notes that may be construed as regulating traffic. Notes such as "VFR practice approaches NA," 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 ft 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 ft, 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 854l(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)**."**

(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 ft, 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 854l(1)(a) 1 and 2].

(8) When LNAV/VNAV minimums are based on remote altimeter setting, or the GPA is greater than 3.5 degrees, or the final segment overlies precipitous terrain, 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 is not permitted because of a back-up remote altimeter source, use: **"Chart note: VDP NA with (name) 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 on commercial telephone access. Additionally, many FAA maintained AWOS-3s are connected to the Service A FSS weather distribution network. AWOS is classified into **four basic levels:**

(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.

Note: Non-Fed AWOSs have a frequency and phone number only, and normally do not go directly onto the weather circuit. However, in some cases, commercial enterprises may contract to put the weather information from some of the Non-Fed AWOS facilities onto the national weather circuit.

(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 the Service A FSS weather distribution network.

(3) AWSS is a FAA sponsored automatic weather observation system and is functionally the same as ASOS.

(4) AWOS-3/ASOS/AWSS transmitted on Service A 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 Flight Procedures Field Office (FPFO) must determine if a procedure requires a full time remote altimeter setting note published based on reliability of the AWOS/ASOS/AWSS.

(5) AWOS-A, -1, -2, and AWOS-3 not transmitted on Service A 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 ft and all visibilities ½ mile."** Where appropriate, define application to DA and/or MDA within the standard note [see paragraphs 8541(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 Service A.

(7) AWOS/ASOS/AWSS 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, AWOS -A, -1, -2, and AWOS-3 not transmitted on Service A 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 ft and all visibilities ½ mile."** Where appropriate, define application to DA and/or MDA within the standard note [see paragraphs 854l(1)(a) 1 and 2]. When an airport uses a remote AWOS/ASOS/AWSS that is not on Service A as a primary altimeter source, flight inspection ensures AWOS/ASOS/AWSS discrete frequency reception at the IAFs of that airport.

(8) AWOS-3/ASOS/AWSS may be used as a remote secondary altimeter source and to support alternate minimums at an airport when:

(a) AWOS-3/ASOS/AWSS is installled and commissioned.

(b) AWOS-3/ASOS/AWSS data are available to FSS specialists and ATC through **Service A** 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 3,000 ft 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 857m**.**

(2) Where radar is the only method for procedure entry from the en route environment, enter the following: **"Chart planview note: RADAR REQUIRED."**

Note: When the conditions of paragraphs 855g(2) and 855h(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 855g(2) note]

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 856f(3).

k. When the "Fly Visual" from MAP to landing area provisions of Order 8260.3, Volume 1, chapter 3, have been applied, use one of the following:

(1) When the "Fly Visual to Airport" requirement applies to all lines of minima, use: **"Chart planview and profile notes: Fly Visual to Airport, 220 degrees - 3.5 miles."**

(2) When the "Fly Visual to Airport" requirement only applies to a particular line of minima (e.g., other missed approach point(s) are close enough to the airport that the "Fly Visual to airport" is not applicable), a note must be established to define which line of minima the note applies: **"Chart planview and profile notes: "LNAV/VNAV - Fly Visual To Airport, 220 degrees - 3.5 miles."**

l*.* **DME frequencies are paired** with the frequencies of the VOR, localizer, or MLS. When a non-paired DME is used in a VOR/DME, ILS/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 854l, and 806c.

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 initial and intermediate approach segment speed restrictions: **"Chart planview note: Limit initial and intermediate approach to 90 KIAS."**

(4) Use the following note for final and missed approach segment speed restrictions: **"Chart planview note: Limit final and missed approach to 70 KIAS."**

Note: For procedures designed to support USA/USAF/USN/USCG operations, the note should read: "Limit all segments to 90 KIAS."

(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 holding fix. Use the following note: "**Chart planview note: Increase to 90 KIAS upon reaching the holding fix.**"

(6) Use the following note when the missed approach requires a nonstandard climb gradient: **"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 ft). Whenever a published glidepath/descent angle is not coincident with the VGSI angle for a runway, use the applicable note below.

(1) Where precision/APV approach (ILS, MLS, TLS, or RNAV) glidepath angles and/or TCH values are not coincident with published VGSI values, use: **"Chart profile note: VGSI and (ILS/MLS/TLS/RNAV as appropriate) glidepath not coincident."**

(2) Where nonprecision vertical descent angles (VDAs) are not coincident with published VGSI values, use: **"Chart profile note: VGSI and descent angles not coincident."**

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 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) RUNWAY** (*number*) **L/R**. **PROCEDURE NOT AUTHORIZED WHEN GLIDE SLOPE NOT AVAILABLE. DUAL VHF COMM REQUIRED. SEE ADDITIONAL REQUIRE-MENTS ON AAUP."**

r. Simultaneous Offset Instrument Approach (SOIA) procedures with "PRM" in

the title (e.g., ILS PRM RWY 12R, LDA PRM RWY 22L, RNAV PRM RWY 18R, etc.) must contain the following in addition to what is required in paragraph 855q:

(1) Change first sentence of paragraph 855q example to read:

(a) For the ILS (or RNAV) PRM approach: "SIMULTANEOUS APPROACH AUTHORIZED WITH LDA PRM RWY (*number*) **L/R**.

(b) For the LDA PRM approach: "SIMULTANEOUS APPROACH AUTHORIZED WITH ILS (or RNAV) PRM RWY (*number*) **L/R**.

(2) Specify the distance between centerlines of the adjacent runway, use the following:

"Chart note: Runway *(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) Approach to a runway. COPTER RNAV (GPS) RWY XX approach procedure, not associated with a heliport.

(b) Approach to a Heliport. COPTER RNAV (GPS) XXX approach procedures that are either straight-in to a heliport, or constructed using PinS criteria and noted **"Chart Planview Note: PROCEED VISUALLY**…;" i.e., visual segment evaluated from MAP to helipoint.

(c) Approach to a PinS. 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 8260-3/5/7 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.

856. 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 missed approach (except radar) must terminate at a clearance limit (fix or facility) and should terminate/connect to the en route structure.

b. Clearance limit altitudes specified in missed approach instructions may be rounded to nearest 100-ft increments. **Other altitudes** used in the missed approach should also use 100-ft increments. If this causes SIAP construction difficulties, use of 50-ft increments is the preferred alternative, with use of 20-ft 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/MLS procedures, the two MAPs should be coincidental. Additionally **identify both MAPs** - one for the full ILS/MLS (DA), and one for the LOC/AZ-only minimums (circling minimums if

LOC/AZ minimums are not authorized). 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. 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," "LNAV: RW18."** Designate the LOC and/or circling MAP as a specific distance in hundredths of a mile after a specified fix or facility or at a specified fix or facility. When LOC-only minimums are NOT authorized, the descent must be made on GS to circling MDA [see paragraph 854m(6)(e)]; change the preprinted term "LOC" to **"Circling."** If DME is available, establish a DME fix in hundredths of a mile for the nonprecision MAP.

(2) Forms 8260-4/5/7. 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 3,100 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 point prior to the connecting word **"then"**, and either is maintained though 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 via 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 856d(3) below.

(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 via 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 4,000 via 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.

(5) Missed approach procedures requiring a turn of more than 15 degrees must **specify an altitude** that is at least 400 ft above the TDZE prior to commencing a turn. Round the resulting altitude to the next higher 100-ft increment: "**Climb to 1200 then climbing left turn to 3100 via 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 ft/NM or specified gradient rate of climb to reach 400 ft above TDZE may be used: **"Climb via ABC R- 090 to 9 DME, then climbing left turn to 5000 direct XYZ VORTAC and hold."** See also paragraph 856b for rounding guidance.

(6) If the procedure serves VOR as well as TACAN equipped aircraft, address TACAN requirements also: **"Climb to 5500 via ABC R-111 then climbing right turn to 6000 direct ABC VORTAC and hold (TACAN aircraft continue via 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 via I-ABC Localizer NE course (030) and 350 course to DEF NDB and hold."**

(8) When the missed approach requires no specific direction of turn: **"Climb to 7000 via ABC R-197 then direct ABC VOR and hold."**

(9) RNAV missed approach 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 5,000 on track 080.22 to SANDY and track 104.56 to GINGR and hold" or, **"Climbing left turn to 5,000 direct CHERL and hold"** or **"Climb on 098.32 course to JARID, then climbing right turn to 6,000 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 <u>does not</u> 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 ft per NM 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 (*) will be used to indicate which line of minima requires the in excess of 200 ft per NM.

(2) In addition to the lower minima that requires the CG, minima will be published to support a standard 200 ft per NM CG.

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 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 via 015 course to DIXIE and hold, continue 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 upon ATC approval: **"Climb to 4000 via 270 course to BONZO and hold. When authorized by ATC, Climb-in-hold to 9000."**

Note 1: Adequate communication and radar coverage must be considered when climb-in-old 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 TERPS Volume 1, paragraph 234e(1).

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 TERPS Volume 1, paragraph 234e(2).

(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 855j(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.** <u>**Alternate missed approach instructions must not be charted.**</u> When alternate missed approach instructions are established, the words: "**… or as directed by ATC**" must immediately follow the primary missed approach instructions. Then document the alternate missed approach procedure as a separate entry.

EXAMPLE:

CLIMB TO 3000 THEN TURN RIGHT DIRECT XUB VOR AND HOLD, OR AS DIRECTED BY ATC.
<u>**ALTERNATE MA:**</u> **CLIMB TO 3,000 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, the NFPO has the responsibility to nsure 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.

857. 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 804b and 856f].

Note: Do NOT document takeoff obstacles on the 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 FAA Form 8260-10."**

b. Visual aids and runway information once printed on the approach chart may be omitted from the additional flight data section on future amendments. Other items such as holding information, restricted area data, final approach course alignment, 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 856f.

(2) Where alternate missed approach holding is established, enter the description as described in paragraph 856g(2).

(3) Where unplanned holding is provided at the alternate missed approach clearance limit, enter the following: **"Chart alternate MA clearance limit, PUGGY (int, fix, DME, etc.)."**

(4) Where arrival holding is operationally advantageous, enter: **"Chart arrival holding at PUGGY: Hold SE, RT, 313.09 inbound, 4,000."**

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. Designate the obstacle elevation in mean sea level (MSL) and location to the nearest second. List obstacle as:

"Chart FAS Obst: 317 Tower 364227N/ 0891523W."

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 TERPS Volume 1, paragraph 289, must be accomplished as follows:

(1) When paragraph 289 is applied to multiple obstacles, document only the highest obstacle in the 7:1 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, above. Do NOT identify it as a "paragraph 289 obstacle." Additionally, make the following entry in the Remarks section of the

Form 8260-9: **"TERPS paragraph 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 NACO 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 vertically guided (ILS, MLS, LDA w/GS, RNP, LPV, 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"

Note: 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.

(2) For straight-in and offset nonprecision (e.g., LDA, LNAV, VOR, etc.) approaches, document the final approach course alignment relative to the runway centerline at threshold, as follows:

"FAC crosses RWY C/L extended 3,180 from THLD"; or **"FAC 450L of RWY C/L extended 3,000 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 mid point 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 852c(1)(c).

j. When a procedure planview area encompasses Special Use Airspace (SUA), use the following note as deemed necessary**: "Chart P-56."**

k. When simultaneous approaches are authorized, each approach must include an entry requiring the depiction of the adjacent localizer. Enter the data as follows: **"Chart LOC RWY 27R."**

l. 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 499]. 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 (or LAAS) CHANNEL #43210
REFERENCE PATH ID: W (or G) 17A

(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/LAAS procedures, document the Height Above Ellipsoid (HAE) used in calculations. See paragraph 275c.

m. 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.

n. Magnetic Variation. Except as provided in paragraph 803, 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 VOR/DME RNAV SIAPs, enter the officially assigned variation value of the reference facility.

(3) For all other RNAV SIAPs, enter the officially assigned variation value of the airport served by the SIAP.

o. Enter the Epoch Year of the variation value as designated by the NFPO [see paragraph 221c(1)]. Enter this value in 4 digits:

EPOCH YEAR: 2000

p. For COPTER PinS procedures that serve more than one landing area and are noted to "proceed VFR" or Special procedures that have had a visual assessment accomplished and state "Proceed Visually," 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

q. For COPTER PinS procedures that have obstacle penetrations in the VFR Transition Area surface evaluation, enter:

Obstacles Penetrate PinS VFR Transition Area - Training Required.

r. 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.**

s. For MLS, enter the following data:

(1) Limits of coverage; e.g., 300 M to 060 M

(2) Height above EL antenna for all fixes from FAF to MAP: **PFAF(1590), TP(1496), RP(1183), DH(194), RWY (44)**

(3) Describe the curved path including radius and direction of turn, course before and after the turn, along-track distance from each fix:

1.25 NM arc to RP
RT 351 deg to 133 deg
6.58 ATD from PFAF
6.33 ATD from TP
0.50 ATD from DA

t. Enter charting instructions for maximum or mandatory altitudes; e.g., **"Chart mandatory 5,000 at DAVID."**

Note: Maximum or mandatory altitudes should be avoided where possible, especially in the final approach segment. Maximum or mandatory altitudes in the final approach *segment must be coordinated through AFS-460 prior to forwarding for publication.*

u. Vertical Descent Angle (VDA)/TCH.

(1) For nonprecision SIAPs (except RNAV with published VNAV minimums), enter the descent angle for the final approach, and the appropriate TCH: **NIXON to RW15: 3.26/55.** Where the VDA values are not coincident with published VGSI values, see paragraph 855n.

(2) For COPTER procedures, except those annotated "proceed VFR…" enter the visual descent angle (to the hundredth of a degree) from the specified descent point (MAP or ATD after MAP) to a specified hover height (20-ft maximum). Data entry format:

(MAP Name**) TO HELIPORT: 7.30/5 ft HOVER**
or
0.2 NM after (MAP Name**) TO HELIPORT: 7.50/20 ft HOVER.**

Note: Except for COPTER procedures to runways, do not publish vertical descent angle data from FAF to MAP.

v. Computer Navigation Fixes (CNF): Enter charting instructions for CNFs; e.g., "**Chart (ABCDE) at intersection of DR leg and intermediate course."**

w. Arc IAFs: Enter the radial that defines the beginning of the arc initial segment; e.g., "**Chart ABC R-060 at WERNR**."

858. 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 5,200-ft radius of the MAP. For multiple COPTER point-in-space SIAPs, enter **"Various Heliports."**

Note: Paragraph 857p 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 857p].

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 TERPS Volume 1, chapter 1, section 6, and paragraph 802 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, include the name of the additional procedure(s).

EXAMPLE:

ILS or LOC/DME RWY xx, Orig
ILS RWY xx (CAT II) ILS RWY xx
(CAT III)

(4) When an ILS/MLS 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)

e. AMDT NO.: Enter "ORIG" or **"AMDT"** with the applicable amendment number/letter. The amendment number must be 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.

(1) Cancellation of an existing procedure and establishment of an original procedure is required when:

(a) The 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 802b].

(b) Procedure ID changed from VOR-A to VOR-B, etc.

(c) The facility providing final course guidance is relocated and the relocation changes the published final approach course.

(d) The reference facility is changed to another facility on a VOR/DME RNAV procedure.

(e) Straight-in minimums are added or deleted which require change to procedure ID; e.g., NDB RWY 28 to NDB-A.

(f) Development or maintenance responsibility of a Special IAP is transferred [see paragraph 441b(10)].

(2) Amendment of a procedure is required when:

***(a) The airport name** is changed.

***(b) The associated city/state** is changed.

***(c) The identification of the facility** providing final approach course guidance is changed.

(d) Equipment is added to or deleted from the procedure which does NOT change the procedure ID; e.g., adding "DME Required" Note.

(e) Procedure ID changes from "VOR/DME" to "VOR/DME or TACAN;" "ILS" to "ILS or LOC/DME."

***(f) The runway designation** is changed due to renumbering of the runways.

(g) Any published fix (name or makeup), course, or altitude is changed.

(h) Any published distance is changed which:

<u>1</u> Requires a change to the Time/Distance Table.

<u>2</u> Is greater than 0.5 NM for distances outside the FAF, or greater than 0.1 NM for distances inside the FAF.

(i) Any minimums change.

(j) Airport elevation is changed where ceiling and/or visibility is affected.

(k) Frequencies are changed in notes on the Forms 8260-3/4/5/7, or military equivalent.

(l) Lighting changes occur and this affects published visibility.

(m) L or R designation removed from title; e.g., VOR/DME RWY 18L/R changed to VOR/DME RWY 18L.

(3) A delayed amendment, not requiring immediate amendment action, BUT which must be processed at the next opportunity, is required when:

(a) The airport elevation/TDZE is changed BUT published ceiling and/or visibility is NOT affected.

(b) Safety of flight is no factor.

(c) Any published distance is changed which is less than or equal to 0.5 NM for distances outside the FAF, or less than or equal to 0.1 NM for distances inside the FAF.

***(d) Marker Beacons** that have been identified for charting have been decommissioned.

(4) No amendment is required when:

(a) Frequencies are changed which were NOT entered in notes on the Forms 8260-3/4/5/7, or military equivalent.

(b) Names of airports mentioned in the "Notes" block of the 8260-series form are changed; e.g., "Use Batesville/Batesville Regional Altimeter setting."

(c) Names and identifiers of facilities are changed, including those mentioned in the "Additional Flight Data" and "Missed Approach" blocks of the 8260-series form.

(d) 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.

(e) Lighting changes occur which do NOT affect published visibility.

(f) Fix coordinates are changed, which do not require a change to the procedure chart [see paragraph 858e(2)(h)].

(5) The NACO may change those items in subparagraphs (2) and (3) above that are identified with an asterisk (*) upon publication in the NFDD as follows:

(a) Procedure amendment(s) are required; therefore, changes must be coordinated with the NFPO so that a formal amendment to the SIAP may be made as soon as possible.

(b) Associated city/state changes must be coordinated to become effective on a 56-day AIRAC date.

(c) Other changes need not be concurrent with a procedure amendment; however, the amendment must occur no later than the charting cycle following the change.

(d) Procedure titles and minima lines may also be revised when runway designations are changed due to re-numbering.

(e) Decommissioned Marker Beacons may be deleted from chart publication.

f. EFFECTIVE DATE. The effective date of the procedure will **normally be entered by NFDC.** The only time the effective date must be entered by the NFPO is when a **specific** effective date is required; e.g., a facility Mag Var rotation [see also paragraph 811c(4)]. Due to the heavy workload associated with the 56-day airspace charting dates, NFDC will normally schedule routine procedure amendments for charting dates commensurate with NFDC and NACO workload. When an effective date is required which is **earlier** than can be routinely assigned by NFDC, the NFPO and Aeronautical Information Management Group (AIMG) must coordinate 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 NFDC requires to process and distribute the SIAP, plus the time required for charting and distribution to subscribers. Normally this time period is nine weeks after receipt of the SIAP in NFDC. 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 the NFPO until the flight inspection is complete; then forwarded as "routine."

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.

859. RESERVED.

SECTION 8. STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD, FAA FORM 8260-9

860. PREPARATION OF FAA FORM 8260-9.

The Standard Instrument Approach Procedure Data Record, FAA Form 8260-9, must be prepared in accordance with the instructions below for each instrument approach procedure developed by the NFPO 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. PART A: OBSTRUCTION DATA.

(1) BLOCK 1:

(a) App. Segment. Identify each Feeder, Initial, Intermediate, and Final segment, and stepdown fixes therein. 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**.

(b) From/To. Enter **segment start/end points,** including stepdown segments, as listed in the Terminal Routes section of Forms 8260-3/4/5/7. 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.

(c) Obstruction. Select the controlling obstruction as directed by chapter 2, section 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 column entries sequentially as they appear on the form in blocks 1 to 4. **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.

(d) Coordinates. Enter coordinates in degrees, minutes, and seconds to the hundredth; e.g., **411532.01N/0943028.09W.**

(e) Elev MSL.

<u>1</u> 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 "Alt. Adj." column.

<u>2</u> Enter the highest terrain elevation used for airspace evaluation to the nearest foot, followed in parentheses by that value rounded to the nearest 100 ft; e.g., 249 (200). See paragraph 507b. Do NOT assign an accuracy code to terrain used for airspace evaluation.

(f) ROC. Enter required obstruction clearance (ROC) for each segment. For precision, LPV, and LDA with glide slope approaches where the OCS is clear, enter "**ASC**" (all surfaces clear). For RNP and Baro-VNAV procedures where obstacles allow a 250 ft HATh, enter "ASC." When the DA is determined by an obstacle within the required ASBL 250-ft ROC area, enter **"PDA."** Where obstacle slope penetrations cause DA adjustment, enter the slope penetrated; e.g., **34:1**. Where obstacles require a glide slope higher than 3 degrees, enter the slope supporting **31.9:1** (for a 3.2 degree glide slope). Document obstacle penetrations per paragraph 860a(1)(c).

(g) Alt. Adj. 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 272a 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; **MEA** - minimum en route altitude; **MAH** - missed approach hold; **SA** - secondary area (also X/Y surfaces, transition areas). 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 3 degrees, enter **GS** but exclude the amount of adjustment.

(h) 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 Forms 8260-3/4/5/7. 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 non-precision final/stepdown and circling must be rounded to the next higher 20-ft increment. For precision or APV approaches, enter DA and HAT values separated by a "**/**"; e.g., **1718/200, 1640/383,** etc.

(2) BLOCK 2: Identify the procedure turn fix/facility under the "From" column. Enter the procedure turn completion distance under the "To" column. If a procedure turn is not the higher glide slope; e.g., authorized, enter **"NA"** under the "from" column. For procedure turn entry zone obstacles, enter **"Entry Zone"** in the space above "Procedure Turn" as appropriate; leave "from" and "to" blocks blank. Allow two lines for obstruction/airspace evaluation entries.

(3) BLOCK 3:

(a) Identify the missed approach point (MAP). For precision or APV approaches, list both precision/APV and nonprecision MAPs (if not collocated), listing precision first. Enter the elevation of the missed approach surface (HMAS) at the MAP: enter the HMAS for precision or APV first, then for nonprecision. Separate both figures with a "**/.**" For the LOC portion of an ILS with a stepdown, enter the surface elevation associated with the lowest MDA. Elaborate in REMARKS as necessary.

(b) Specify the clearance limit under the "to" column.

(c) Document the controlling obstacle [see paragraph 274b]; including 40:1 surface penetrator and highest 1,000-ft level surface, by obstacle type, coordinates and elevation. Document highest terrain in the level surface primary area, as well as adjustments, etc. Specify the controlling obstruction, coordinates, and elevation where a climb gradient is required for ILS CAT II or III.

(d) Enter "ASC" in the "ROC" column. Enter the clearance limit altitude. Elaborate in REMARKS, if necessary.

(4) BLOCK 4: Enter the circling data for each category of aircraft authorized by the procedure. The required height above the airport (HAA), the straight-in MDA, or the circling ROC may determine the minimum circling altitude. When the minimum altitude has been established, enter the resulting HAA in the "actual" block. If two HAAs are available, enter both HAAs separated by a **"/."** Enter controlling obstacle type and NACO obstacle number, if appropriate. Enter controlling obstacle coordinates to the hundredth of a second. Enter controlling obstacle MSL elevation followed in parentheses by the appropriate accuracy code. Enter ROC to the nearest foot. When HAA controls the circling minimum altitude, enter **"HAA"** in the "ALT. ADJUST." column; when the straight-in MDA controls the circling minimum altitude, enter **"SI."** Enter other adjustment codes and amounts as appropriate [see Block 1, paragraph g]. Enter only the published minimum altitudes to the next higher 20-ft 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).

(5) BLOCK 5: Identify the NAVAID or fix used as the MSA center point, the type of obstructions and their location by reference to bearing (magnetic) and distance (nearest 0.1 NM) from the center point. Enter the controlling obstruction type (tower, trees, etc.) for each sector. Enter the MSL elevation of the respective controlling obstacle to the nearest foot followed in parentheses by the appropriate accuracy code. Enter the resulting MSA in the appropriate block in hundreds of feet. If a "common safe altitude" is established, define only one sector (360 degrees - 360 degrees) and only the one controlling obstacle. Enter appropriate data for RNAV procedures incorporating a TAA with an MSA sector established in lieu of a TAA sector. Leave blank for RNAV procedures incorporating a TAA.

(6) CITY AND STATE; AIRPORT AND ELEVATION; FACILITY; PROCEDURE AND AMENDMENT NO.; REGION: Enter city/state, airport name and elevation as on Forms 8260-3/4/5/7. Enter facility 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. Enter the procedure name if the procedure is an original, enter **"ORIG"** or if an amendment, enter **"AMDT"** with the applicable number. Enter the three-letter code for the FAA region responsible for the SIAP.

b. PART B: SUPPLEMENTAL DATA.

(1) BLOCK 1: 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) BLOCK 2: Identify the weather reporting service(s) used for the procedure. Check "FAA," "NWS," and or "A/C" as appropriate for weather offices used for the procedure. "A/C" indicates an air carrier with approved weather reporting service. Enter automatic weather reporting systems used in "Other." Include level for AWOS. Enter the location by ICAO airport identifier for the weather source(s). Hrs Optn: leave blank. For agencies with access to Aviation System Standards Information System (AVNIS), leave Block 2 blank.

(3) BLOCK 3: Identify by ICAO airport identifier the altimeter setting source (or sources separated by a "/"). 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. If the remote altimeter setting is used for backup purposes, enter the word "Backup" in the Hours Remote Operation block. Enter the resulting altitude adjustment (ROC increase) value rounded to the next higher whole foot increment. This value is used in the "ALT. ADJ." Column in Part A, as appropriate. For agencies with access to Aviation System Standards Information System (AVNIS), leave Block 3 blank. Enter in Part C, REMARKS, whether pressure patterns are the same, or not, the ICAO 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) BLOCK 4: 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. Secondary blocks, leave blank. For GPS or RNAV or non-VOR/DME RNAV, leave blank. For VOR/DME RNAV, enter the Reference Facility 3-letter ID. For agencies with access to AVNIS, leave Block 4 blank.

(5) BLOCK 5: Indicate the available approach, runway, and visual glide slope indicator (VGSI) lighting used for the procedure. Complete preprinted entries on computer generated form. Enter VGSI types, i.e., VASI, PAPI, etc, in "Other." Enter **"(PCL)"** in the respective block when pilot controlled lights are available. For agencies with access to AVNIS, leave Block 5 blank.

(6) BLOCK 6: List the runways with serviceable runway markings. Place **"BSC"** data on Runway line, **"PIR"** data on "All Weather" line, and **"NPI"** data on "Instrument" line. Place non-standard data in REMARKS. For agencies with access to AVNIS, leave Block 6 blank.

(7) BLOCK 7: List runway visual range (RVR) systems for the straight-in runway served by the procedure. Enter midfield RVR data on "Midfield" line. For agencies with access to AVNIS, leave Block 7 blank.

(8) BLOCK 8: Provide GS/GP information as indicated for all precision and APV procedures to the following accuracy: GS/GP angle – nearest .01 degree; distance THLD to GS/GP Ant – nearest foot; elevation RWY THLD and GS/GP Ant – nearest 0.1 ft; TCH – nearest 0.1 ft. These values must agree with the approved database. For agencies with access to AVNIS, leave Block 8 blank.

(9) BLOCK 9: 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 both blocks on any precision or APV approach, or where the FAC is directly aligned to the runway threshold. For distances, from thresholds between 3,000 ft and 5,200 ft, enter the specific value. For those final approaches that parallel the runway centerline extended or intersects the centerline more than 5,200 ft from the threshold, specify the distance between the FAC and the RCL extended at a point 3,000 ft from the LTP measured perpendicular to the RCL. For circling or point-in-space alignment, explain in REMARKS.

(10) BLOCK 10: List all waivers by stating the Order number, paragraph, and a brief description of the waiver in the following format:

Order 8260.3B, Volume 1, paragraph 282a and Volume 3, paragraph 2.9.1; DME signal source angular divergence exceeds maximum allowed.

c. PART C: REMARKS. Use this space to amplify previous entries (state associated block number for reference), or to record essential data not considered elsewhere on the form. See also paragraphs 431, 852c(1)(c), and 857f.

(1) Document TERPS, Volume 1, paragraph 251 surface 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 hundredth of a foot. Use standard entry:

TERPS, Volume 1, paragraph 251 penetrations:

<u>20:1</u> 5345 TREE (KSUN0092)
432931.65N/1141713.21W (43.57)
5342 TREE (KSUNT037)
432930.08N/1141710.91W (30.03)

<u>34:1</u> 5337 TREE (KSUN0081)
432927.26N/1141702.79W (27.89)

*Note: For **RNAV (RNP)** procedures, include the horizontal/vertical obstacle accuracy values. The amount of penetration <u>includes</u> obstacle accuracy.*

<u>20:1</u> 5345 TREE (KSUN0092) (20/2)
432931.65N/1141713.21W (46.07)
5342 TREE (KSUNT037) (50/20)
432930.08N/1141710.91W (51.19)

<u>34:1</u> 5337 TREE (KSUN0081) (20/2)
432927.26N/1141702.79W (30.51)

(2) State the effect, if any, of waivers to published minimums.

(3) For VOR/DME RNAV SIAPs, enter the MA fix XTRK error.

(4) For RNAV SIAPs, state the type and coordinates of the obstacle penetrating the RNAV obstacle slope.

(5) Enter the amount of threshold displacement, if any.

(6) Enter airspace date required by paragraph 507k. 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 507k.

(7) When flight inspection determines TCH in accordance with Order 8260.3B CHG 19, enter: **"Flight Check RDH ______ft, (Order 8260.3B CHG 19)."** Substitute ARDH for RDH if appropriate.

(8) When flight inspection establishes a final FAC other than the plotted magnetic course, enter:

"Plotted FAC is 0.87.43 M."
"Electronic flight inspected FAC is 089 M."

(9) For RNAV (GPS and RNP) Baro-VNAV procedures, enter Critical Temperature computations if other than standard [see paragraph 497].

(10) Enter a reason when a VDP has not been established [see paragraph 431]: e.g., **"VDP NOT ESTABLISHED – Obstacles penetrate VDP surface."**

(11) Enter a statement indicating the automated precipitous terrain evaluation has been completed: **"PRECIPITOUS TERRAIN EVALUATION COMPLETED."** This will be done even if adjustments are required and entered in Part A, Block 1. Additionally, when the precipitous terrain is identified in a Feeder Segment located in designated mountainous terrain areas, ROC reductions (TERPS paragraph 1720) are not authorized. Document as follows:

"Feeder Segment (Fix Name) to (Fix Name) terrain identified as precipitous; ROC reductions not authorized/2000-Ft ROC Required."

(12) Enter the statement below when it is necessary for an RNAV (RNP) PFAF at the same PFAF location (named fix) of an existing vertically-guided procedure(s) that was computed using the PFAF formula prescribed in Order 8260.3 (Change 19), Volume 3, paragraph 2.9:

> **"PFAF coordinates are based on the formula defined in Order 8260.3 (Change 19), Volume 3, paragraph 2.9. When either procedure is reviewed or amended, revise the PFAF location to be compliant with the current formula prescribed in Order 8260.52, *U.S. Standard for Required Navigation Performance (RNP) Approach Procedures with Special Aircraft and Aircrew Authorization Required (SAAAR)*, paragraph 3.4."**

> *Note: This situation will occur when a RNP SAAAR procedure is being designed to overlay another vertically guided approach procedure that already exists with the same TCH, glidepath angle, intercept altitude, and a named PFAF, (i.e., LNAV/VNAV). The coordinates of the existing procedure's PFAF should be revised to be consistent with the SAAAR procedure. If this is not possible during RNP procedure design, the coordinates of the existing, underlying procedure PFAF may be used for RNP procedure construction provided the underlying PFAF(s) and RNP PFAF are compliant with Order 8260.52, paragraph 3.4 at the next numbered amendment of ANY affected procedure.*

(13) For RNAV (RNP) procedures, attach a copy of the VEB spreadsheet(s) [PFAF calculations, VEB OCS origin and slope, Temperature limits, and VEB ROC] used to develop the procedure. Additionally, document RF turn radius computations for each RF segment and the variables used [Where TR=Turn Radius (NM) and BA = Bank Angle].

Example:

SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA
CUKLI-LICIP	4000	250	70.00	3985.20	60.00	4.20	19.72

(14) 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. In the Notes section of Form 8260-3/7 state: ***Chart Planview Note at FONVI: MAX 140 KIAS****.*

d. PART D: PREPARED BY. Enter the name and title of the NFPO specialist or non-Federal developer responsible for preparing the data record; the date prepared; and the originating office.

e. 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 1/2" x 11" sheet. This graphic presentation becomes part of the NFPO 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.

f. Distribution*.* Retain completed copies of the Form 8260-9 with the associated SIAP and distribute as defined in table 8-1.

861.-869. RESERVED.

SECTION 9. COMPLETION OF FORMS 8260-4/7/10

870. 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.

871. FORM 8260-4, RADAR.

Instructions for completion of Forms 8260-3/5/7/10 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 the NFPO, 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 871d(1)].

(2) Where the MVA at the FAF or at fixes preceding the FAF is greater than the FAF altitude, document hose segments prior to the FAF on Form 8260-9 [see also paragraph 871d(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. Radar missed approach procedures should return the aircraft to a fix or facility without a requirement for radar guidance. 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 the 8260-10 continuation sheet.

c. Approach Minimums. The minimums section must be completed as indicated in paragraph 854.

d. Radar Notes.

(1) Establish a FAF, minimum altitude (glide slope 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 9,000, minimum altitude 3 mile fix 7,300, final approach course 168. Recommended altitude: 7 miles 8,720, 6 miles 8,360, 5 miles 8,000, 4 miles 7,660, 3 miles 7,300, 2 miles 6,920."

(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 9,000."**

(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 8,000, 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 the NFPO.

f. Lower blocks. Data must be the same as Forms 8260-3/5/7 [see paragraph 858] 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.

872. FORM 8260-7, SPECIAL INSTRUMENT APPROACH PROCEDURE.

a. See chapter 4, section 4, for Special procedure development, approval, and processing instructions.

b. Completing Form 8260-7. This form will 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. Instructions for completion of Forms 8260-3/5/10 are also applicable to Form 8260-7, except as follows [see paragraphs 854m(9)]:

(1) If a named fix, which is not an en route fix, is required for the Special procedure, the fix must be documented on a Form 8260-2 and processed in the normal manner. The FPO must provide a copy to the user.

(2) IFR Departure Procedure/ Takeoff Minimums. At locations where there are no public or existing Departure Procedures (DP) established and TERPS evaluation reveals that standard takeoff minimums cannot be authorized, a DP must be established. A special DP must be documented on the appropriate 8260-15 series form under Order 8260.46. The appropriate block must be checked on Form 8260-7 to indicate the need to "See Form 8260-15 for this airport," so that a DP will accompany the approach procedure when charted and/or disseminated. Enter the term "SPECIAL" in the "Effective Date" block on the Form 8260-15. If a public SIAP exists for the airport, the published public DP applies.

c. Approval.

(1) Following quality review, the person who developed the procedure signs the original Form 8260-7 in the upper portion of the space under "Developed by." Pending revision of the form, insert the term "Recommended by" in the lower half of this space that must be signed by the NFPO Manager or the designated representative. Forward the completed form to AFS-400 for final approval.

(2) For procedures developed by non-government sources, in addition to the requirements stated in paragraph 872c(1) above, see additional guidelines established in chapter 4, section 4, *Special Instrument Procedures Processing*.

d. 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 Jeppesen Sanderson, Inc. and other cartographic agencies that may request copy service.

(7) AJR-32.

(8) NFPO.

(9) Airport Manager.

e. Radar Special Procedures. If there is a requirement for a radar special procedure, use Form 8260-4 in lieu of Form 8260-7. Delete reference to Part 97.31 and add the word **"Special."** Use the reverse side of the Form 8260-7 to document the approval and to provide for incorporation in the Operations Specifications.

f. Limitations on the Use of Special Procedures.

(1) Where a special procedure requires certain crew qualifications, training, or other special considerations in order to execute the approach, the NFPO must add the following statement in the NOTES section of the Form 8260-7 restricting the use of that procedure to a particular operator: **"For use by ABC Airlines only."** If more than one user is authorized the same Special procedure and there are no differences in the procedure design, the FSDO must maintain a list of authorized users. This will preclude amendments to the 8260-7 forms when users are added.

(2) Regional development and/or documentation of foreign terminal instrument procedures (FTIP) is 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 8260-7 and processed in accordance with Order 8260.31.

873. FORM 8260-10, CONTINUATION SHEET.

a. Use. Form 8260-10 is used as a continuation sheet for Forms 8260-3/4/5/7. 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 Title 14 CFR part numbers as required.

Note: For Special procedures, enter "SPECIAL" in place of the Title 14 CFR par 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 858].

(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 8260-3/4/5/7 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., 8260-3, 8260-5, etc [see paragraph 811]. "ALL AFFECTED PRO-CEDURES REVIEWED," "COORDINATES OF FACILITIES," "REQUIRED EFFECTIVE DATE," "COORDINATED WITH, FLIGHT CHECKED BY," "DEVELOPED BY," and "APPROVED BY" blocks of the 8260-10 are left blank. CHANGES and REASONS blocks can be used for appropriate entries that do not fit on the basic procedure form.

874.-879. RESERVED.

SECTION 10. TRANSMITTAL OF AIRWAYS-ROUTE DATA FAA FORM 8260-16

880. PREPARATION OF FAA FORM 8260-16.

This form serves as a transmittal sheet of en route procedural data to be published under Part 95. Part 95 routes include Victor Airways, Jet Routes, RNAV "Q" (for FL 180 and above) 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. FROM/TO*.* Each segment (fix to fix) must be listed, unless succeeding segments have no significant changes. Segments must be separated at facilities, flagged fixes, and changes of MEA, MOCA, or MAA. All airways and routes terminate at the U.S. control area boundary (route alignment may be explained in REMARKS).

(1) Route segments are normally listed from West to East for even numbered airways or South to North for odd numbered airways. When amending published routes, follow the order of listing in the semi-annual consolidation of Part 95 routes.

(2) Facilities are identified by name (include waypoint type in parentheses for RNAV routes), and the two letter state abbreviation, followed by the facility type.

Examples:

Airway/Jet Route: Charlotte, NC, VOR/DME
RNAV Route: Charlotte (FB), NC, VOR/DME

(3) Fixes are identified by name (include waypoint type in parentheses for RNAV routes), and the two letter state abbreviation.

Examples:

Airway/Jet Route: JOTTA, NC.
RNAV Route: JOTTA (FB), NC.

(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 (FB) (TF), NC, VOR/DME.
JOTTA (FB) (TF), NC

(5) "Q" routes can be flown using GNSS or DME/DME/IRU. 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 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.

c. 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.**

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). Use the **" @ "** to identify which obstacle controls the MEA, even though MRA may require a higher altitude. Show coordinates to the minute (seconds optional). Annotate a controlling obstacle that is in the secondary area, and show the required obstacle clearance. No entry is required for high altitude (Jet or RNAV) routes if terrain is not a factor. Enter reduction of mountainous obstacle clearance.

e. MRA/MOCA. Enter both figures. To reduce chart clutter, MOCAs less than 500 ft 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, line it out (the figure will still be legible for office record purposes).

(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 ft below the MEA unless the resulting MOCA will provide a cardinal altitude.

f. MAA/MEA. Enter both figures. When dual MEAs are used, show the directions of flight. 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.

(2) For high altitude RNAV "Q" routes, the MEA, like Jet routes, is considered to be FL 180 unless noted otherwise. However, when there is insufficient DME coverage to support the use of DME/DME/IRU "Q" route operations, an MEA may be established to define the lowest altitude that will support DME/DME/IRU use.

g. A GNSS MEA is required on all RNAV routes and may be established (when required) for low altitude airways. Do not establish a GNSS MEA on a Victor or colored airway unless it is at least 500 ft 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**, enter **"DL."** If the dogleg point is a fix, enter the fix name. Establish a named fix on all dogleg airways that meet en route VHF intersection criteria. Establish a named DME fix or CNF on all dogleg airways that do not meet VHF intersection criteria.

i. FIX MRA/MCA (MCA only applicable for low altitude RNAV routes). Entries here are referred to the appropriate fix by an attention symbol **(*).** The same information is required on the Form 8260-2 for the fix. Show the direction of flight for MCAs.

j. REMARKS. 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

(1) To assist charting agencies, when segments are amended or canceled, describe the changes in this section or elsewhere on the form as appropriate.

k. 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.

l. DISTRIBUTION. The approved Form 8260-16 must be prepared by the NFPO and distributed as defined in table 8-1.

m. Examples: Figure 8-4 contains a consolidated group of examples that can be used when completing Form 8260-16.

n. 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.

881.-889. RESERVED.

Figure 8-4. Transmittal of Airways/Route Data.

TRANSMITTAL OF AIRWAYS / ROUTE DATA

Page of Pages

AIRWAY NO. OR ROUTE	FROM / TO	ROUTINE OR DOCKET NO.	CONTROLLING @ TERRAIN/OBSTRUCTION AND COORDINATES	MRA / MOCA	MAA / MEA	GNSS MEA	CHANGE OVER POINT	FIX MRA/MCA	REMARKS	FLIGHT INSPECTION DATES
Q502	NORFOLK, NE VOR/DME			20000	45000					3/12/06
	SIOUX FALLS, SD VORTAC				20000					
J345	LOST WAGES, NV VOR			23000	45000					6/10/06
	UP CREEK, CO VORTAC				23000					
V413	GOPHER, MN VORTAC		TOWER 2438@ 450345N/930822W	5500	17,500	4000		*5500	*FLIGHT CHECK RESTRICTION ON FARMINGTON(FGT) VORTAC	ON FILE
	*WAGNR, MN INT		TERRAIN 1290 445700N/921900W	3400	6500NE 5500SW					
T204	CHARLOTTE (FB), NC VOR/DME			2300	10000				MRA increased by Flight Inspection	10/23/06
	JOTTA (FB) (TF), NC			2000	2300					

DATE	OFFICE	TITLE	SIGNATURE
11/26/2006	AJW-XXX	MANAGER	

FAA FORM 8260 - 16 / October 2002 (computer generated)

APPENDIX 1.

ACRONYMS AND ABBREVIATIONS

APPENDIX 1. ACRONYMS AND ABREVIATIONS

AAO	adverse assumption obstacle
AAUP	Attention All Users Page
AC	Advisory Circular
ADF	automated direction finder
ADP	automatic data processing
AF	Airway Facilities
AFD	Airport/Facility Directory
AFS	Flight Standards Service
AFFS	Automated Flight Service Station
AGL	above ground level
AIP	Aeronautical Information Publication
ALS	approach light system
AOP	NAS Operations Program
APO	aviation policy and plans
APV	approach with vertical guidance
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 and Analysis for TERPS
ASIP	Airspace System Inspection Pilot
AVNIS	Aviation System Standards Information System
ASOS	automated surface observing system
ASR	airport surveillance radar
ATC	Air Traffic Control
ATD	along track distance
ATRK	along track
AIM	Aeronautical Information Manual
AWOS	Automatic Weather Observing System
AWOPM	All Weather Operations/ Program Manager
Baro VNAV	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 cycle
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)
DH	decision height
DG	descent gradient
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
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
FB	fly-by
FCC	Federal Communications Commission
FDC	Flight Data Center
FIFO	Flight Inspection Field Office
FIOO	Flight Inspection Operations Office
FI/P	Flight Information/Permanent
FI/T	Flight Information/Temporary
FMO	Frequency Management Office
FMS	frequency management system
FO	fly-over
FPAP	flight path alignment point
FPCP	flight path control point
FPFO	Flight Procedures Field Office
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
GCA	ground control approach
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 elipsoid
HAL	height above landing area elevation
HAS	height above surface
HAT	height above touchdown
HF	high frequency
HMAS	height of missed approach surface
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
ISA	International Standard Atmosphere
KIAS	knots indicated airspeed
LAAS	local area augmentation system
LDA	localizer type directional aid
LF	low frequency
LNAV	lateral navigation
LOA	letter of agreement
LOB	lines 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	minimum intensity approach lighting system
MALSF	minimum intensity approach lighting system with sequenced flashing
MALSR	minimum 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
MLS	microwave landing system
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 turn altitude
MVA	minimum vectoring altitude
MVAC	minimum vectoring altitude chart
NACO	National Aeronautical Charting Office
NAD	North American Datum
NAET	National Aircraft Evaluation Team
NAPT	National Airspace and Procedures Team
NAS	National Airspace System
NAVAID	navigational aid
NAVD	North American Vertical Datum
NCP	NAS Change Proposal
NDB	non-directional radio beacon
NFD	National Flight Database
NFDC	National Flight Data Center
NFDD	National Flight Data Digest
NFPO	National Flight Procedures Office

NGA	National Gospecial-Intellegence Agency
NM	nautical mile
NOAA	National Oceanic & Atmospheric Administration
NOS	National Ocean Service
NOTAM	Notice to Airmen
NPRM	Notice of Proposal Rulemaking
NTAP	Notices to Airmen
OC	obstruction chart
OCA	obstacle clearance altitude
OCS	obstacle clearance surface
ODP	obstacle departure procedure
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
PFAF	precise final approach fix
PinS	point in space
POI	principal operations inspector
PO	proponent operator
POC	point of contact
PRB	Procedures Review Board
PT	procedure turn
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
RF	constant-radius-to-a-fix leg (RNAV)
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	stepdown fix
SIAP	standard instrument approach procedure
SID	standard instrument departure
SM	statute mile
SMGCS	Surface Movement Ground Control System
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 area navigational aid
TCH	threshold crossing height
TDP	touchdown point
TDZ	touchdown zone
TDZE	touchdown zone elevation
TERPS	U.S. Standard for Terminal Instrument Procedures
TF	track-to-fix leg (RNAV)
TLS	transponder landing system
TPP	terminal procedure publication
TRACON	terminal radar approach control facility
TSO	technical standard order
UHF	ultra high frequency
USA	U.S. Army
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 (RNAV)
VASI	visual approach slope indicator
VCA	visual climb area
VDA	vertical descent area
VDP	visual descent point
VFR	visual flight rules
VGSI	visual glide slope indicator
VHF	very high frequency
VI	Vector-to-intercept leg (RNAV)
VLF	very low frequency
VM	vector-to-a-fix leg (RNAV)
VMC	visual meteorological conditions
VNAV	vertical navigation
VOR	very high frequency omni-directional radar range
VOR/DME	VOR collocated with DME
VORTAC	VOR collocated with tactical area navigation

VPA	vertical path angle
WAAS	wide area augmentation system
WCH	wheel crossing height
WP	waypoint
XTRK	crosstrack

APPENDIX 2.

FLIGHT PROCEDURES REFERENCES

APPENDIX 2. FLIGHT PROCEDURES REFERENCES

The following documents (latest versions) form the basic reference library for flight procedures activities.

ORDERS AND NOTICES

Number	Subject
1000.1	Policy Statement of the Federal Aviation Administration
1050.1	Policies and Procedures for Considering Environmental Impacts
1350.5	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 Requirement
6750.49	Maintenance of Instrument Landing Systems (ILS) Facilities
6850.2	Visual Guidance Lighting Systems
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
7110.65	Air Traffic Control
7110.79	Charted Visual Flight Procedures
7130.3	Holding Pattern Criteria
AT 7130.8	Development of Holding Pattern Criteria and Procedures
7210.3	Facility Operations and Administration
7210.37	En Route Minimum IFR Altitude (MIA) Sector Charts
7232.5	Reduced or Increased Operating Hours for ATCT's/Approach Control Facilities
7340.1	Contractions
7350.2	Air Traffic Operational Coding System
7350.7	Location Identifiers
7400.2	Procedures for Handling Airspace Matters
7450.1	Special Use Airspace Management System
7610.4	Special Operations
7900.2	Reporting of Electronic Navigation Aids and Communication Facilities Data to the NFDC
7900.5	Surface Weather Observing

ORDERS AND NOTICES (Continued)

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 Procedures Service
8260.16	Airport Obstruction Surveys
8260.19	Flight Procedures and Airspace
8260.23	Calculation of Radio Altimeter Height
8260.26	Establishing and Scheduling Standard Instrument Procedure Effective Dates
8260.31	Foreign Terminal Instrument Procedures
8260.32	United States Air Force Terminal Instrument Procedures Service
8260.37	Heliport Civil Utilization of Collocated Microwave Landing System (MLS)
8260.38	Civil Utilization of Global Positioning System (GPS)
8260.40	Flight Management System (FMS) Instrument Procedures Development
8260.42	Helicopter Global Positioning System (GPS) Nonprecision Approach Criteria
8260.43	Flight Procedures Management Program
8260.44	Civil Utilization of Area Navigation (RNAV) Departure Procedures
8260.45	Terminal Arrival Area (TAA) Design Criteria
8260.46	Departure Procedure (DP) Program
8260.48	Area Navigation (RNAV) Approach Construction Criteria
8260.54	The United States Standard for Area Navigation (RNAV)
8400.8	Procedures for Approval of Facilities for FAR Part 121 and Part 135 CAT III Operations
8400.10	Air Transportation Operations Inspector’s Handbook
8400.13	Procedures for the Approval of Special Authorization Category II and Lowest Standard Category I Operations
8700.1	General Aviation Operations Inspector's Handbook

ADVISORY CIRCULARS

FAA-H-8083-15	Instrument Flying Handbook
FAA-H-8261-1	Instrument Procedures Handbook
70/7460-1	Obstruction Marking and Lighting
70/7460-2	Proposed Construction or Alteration of Objects that May Affect the Navigable Airspace
73-2	IFR Helicopter Operations in the Northeast Corridor
90-42	Traffic Advisory Practices at Airports Without Operating Control Towers
90-45	Approval of Area Navigation Systems for Use in the U.S. National Airspace System
90-80	Approval for Offshore Standard Approach Procedures (OSAP), Airborne Radar Approaches (ARA), and Helicopter En Route Descent Areas (HEDA)
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

ADVISORY CIRCULARS (Continued)

150/5340-1	Standards for Airport Markings
150/5340-4	Installation Details for Runway Centerline and Touchdown Zone Lighting Systems
150/5340-14	Economy Approach Lighting Aids
150/5340-17	Standby Power for Non-FAA Airport Lighting Systems
150/5340-18	Standards for Airport Sign Systems
150/5340-19	Taxiway Centerline Lighting Systems
150/5340-24	Runway and Taxiway Edge Lighting Systems
150/5340-26	Maintenance of Airport Visual Aid Facilities
150/5340-27	Air-to-Ground Radio Control of Airport Lighting Systems
150/5345-28	Precision Approach Path Indicator (PAPI) Systems
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
170-13	Approach Lighting System Configurations and Energy Conservation

TITLE 14, CODE OF FEDERAL REGULATIONS (CFR).

Part 1	Definitions and Abbreviations
Part 71	Designations of Class A, Class B, Class C, Class D, and Class E Airspace Areas; Air Traffic Service Routes; and Reporting Points
Part 73	Special Use Airspace
Part 77	Objects Affecting Navigable Airspace
Part 91	General Operating and Flight Rules
Part 93	Special Air Traffic Rules
Part 95	IFR Altitudes
Part 97	Standard Instrument Approach Procedures
Part 103	Ultralight Vehicles
Part 121	Operating Requirements: Domestic, Flag, and Supplemental Operations
Part 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 on board Such Aircraft
Part 129	Operations: Foreign Air Carriers and Foreign Operators of U.S. - Registered Aircraft Engaged in Common Carriage
Part 135	Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons on board such Aircraft
Part 139	Certification and Operations: Land Airports serving Certain Air Carriers
Part 150	Airport Noise Compatibility Planning
Part 152	Airport Aid Program
Part 157	Notice of Construction, Alteration, Activation and Deactivation of Airports
Part 161	Notice and Approval of Airport Noise and Access Restrictions
Part 170	Establishment and Discontinuance Criteria for Air Traffic Control Services and Navigational Facilities
Part 171	Non-Federal Navigation Facilities

OTHER PUBLICATIONS

Aeronautical Information Manual (AIM)
Airport Facility Directory
Airport Master Record - FAA Form 5010.1
Airspace Dockets
Area Charts
Graphics 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

APPENDIX 3.

OBSTACLE ACCURACY STANDARDS, CODES, AND SOURCES

APPENDIX 3. OBSTACLE ACCURACY STANDARDS, CODES, AND SOURCES

100. 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 shall 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 displace-ment 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 3-3/4 minutes of latitude and longitude.

101. 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 and/or horizontal adjustment applied [see paragraph 860a(1)(g)].

HORIZONTAL

Code	Tolerance	
1	+20 ft	(6 m)
2	+50 ft	(15 m)
3	+100 ft	(30 m)
4	+250 ft	(75 m)
5	+500 ft	(150 m)
6	+1,000 ft	(300 m)
7	+1/2 NM	(900 m)
8	+1 NM	(1800 m)
9	Unknown	

VERTICAL

Code	Tolerance	
A	+3 ft	(1 m)
B	+10 ft	(3 m)
C	+20 ft	(6 m)
D	+50 ft	(15 m)
E	+125 ft	(38 m)
F	+250 ft	(75 m)
G	+500 ft	(150 m)
H	+1,000 ft	(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) Flight path and transitional areas +20 ft (6 m) horizontally and +2 ft (1 m) vertically out to 20,000 ft (6100 m). **Code 1A.**

(b) Flight path and transitional area +40 ft (12 m) horizontally and +20 ft (6 m) vertically beyond 20,000 ft (6100 m). **Code 2C.**

(c) Horizontal surface area +20 ft (6 m) horizontally and +5 ft (1.5 m) vertically. **Code 1B.**

(d) Conical surface +40 ft (12 m) horizontally and +20 ft (6 m) vertically**. Code 2C.**

(e) Radio and TV towers +20-40 ft (6-12m) horizontally, as in paragraphs 101b(1)(a)1 and 2, but +40 ft (12 m) horizontally and +10 ft (3 m) vertically if not surveyed for an OC chart. **Code 2B.** Radio and TV towers are accurate vertically to +2 ft (.6 m) anywhere on the OC survey if they penetrate a surface. **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 ft (15 m) horizontally and +20 ft (6 m) vertically. **Code 2C.**

(b) Obstruction Evaluations (OE): All obstacles, +250 ft (75 m) horizontally and +50 ft (15 m) 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 ft (6 m) horizontally and 3 ft (1 m) vertically. **Code 1A.** Other obstacles, +50 ft (15 m) horizontally and +10 ft (3 m) vertically, unless verified to a higher accuracy. **Code 2B.**

(f) Flight inspection fly-by, +250 ft (75 m) horizontally and +50 ft (15 m) vertically. [See Order 8200.1, chapter 6, paragraph 6.12.] **Code 4D.**

(g) Flight edit photogrammetry, +100 ft (30 m) horizontally and +20 ft (6 m) vertically, excluding moveable objects. **Code 3C.**

(h) Estimated by airport owner or operator, +1/2 NM (900 m) horizontally and +500 ft (150 m) vertically. **Code 7G.**

(i) World Aeronautical Chart (WAC), Sectional Chart, and VFR Terminal Chart.

1 Terrain features which are not marked as spot elevations:

Chart	Horizontal	Vertical*
WAC	+1,700 ft (500 m)	+500 ft (150 m)
Sec	+900 ft (275 m)	+250 ft (75 m)
VFR	+500 ft (150 m)	+250 ft (75 m)

*1/2 contour line

2 When **obstacles or mountain peaks** are specifically marked by a spot elevation, the vertical accuracy changes to the full contour interval. Horizontal accuracy determined by chart type as specified in paragraph 101a.

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.

(a) National Geospecial-intelligence Agency (NGA):

1 **Digital Terrain Elevation Data (DTED) (Level 0)** 1 kilometer postings from 1:350,000 charts, +500 ft (150 m) horizontally and +100 ft (30 m) vertically **Code 5E. DTED (Level 1),** 100 meter postings +50 m (164 ft) horizontally and +30 m (98 ft) vertically. **Code 4E**. **DTED (Level 2),** 30 meter postings +23 m (76 ft) horizontally and +18 m (59 ft) 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 ft (150 m) horizontally and +125 ft (38 m) vertically. **Code 5E**.

5 **Topographical Line Maps (TLM)**, (1:50,000 and 1:100,000 scale), +50 ft (15 m) horizontally and +20 ft (6 m) 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 101b(1)(a)].

(4) Department of Interior. U.S. Geological Survey data in magnetic tape files are claimed to be accurate to +1,000 ft (300 m) horizontally and +100 ft (30 m) 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 ft (1 m). Otherwise, these charts have the following accuracies:

(a) Topographical charts (1:250,000 scale), +1,000 ft (300 m) horizontally and +125 ft (38 m) vertically. **Code 6E.**

(b) Topographical charts (1:100,000 scale), +250 ft (75 m) horizontally and +125 ft (38 m) vertically. **Code 4E.**

(c) Topographical charts (1:62,500 or 1:63,360 scale), +250 ft (75 m) horizontally and +50 ft (15 m) vertically. **Code 4D.**

(d) Topographical charts [**1:20,000, 1:24,000) (7 1/2 min. Quad series), and** 1:25,000], +40 ft (12 m) horizontally and +20 ft (6 m) vertically. **Code 2C**.

1 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:

	Landmarks Depicted on Chart	**Owner Marked Positions**
1:250,000	7G	8H
1:62,500 or 1:63,360		
(</ = 40 ft contours)	4E	5E
(80 ft contours)	4F	5F
1:20,000 or 1:24,000		
(</ = 10 ft contours)	4D	5D
(20 ft 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 m (43 ft) horizontally and +14 m (46 ft) vertically. **Code 2D.**

(b) DEM 7.5 Minute (Level 2), +13 m (43 ft) horizontally and +17 m (56 ft) vertically. **Code 2E.**

(c) DEM 1 Degree (1:250,000 scale), +130 m (427 ft) horizontally and +30 m (98 ft) vertically. **Code 5E.**

APPENDIX 4.

DATA WORKSHEET FOR FAA FORM 8260-2,

RADIO FIX AND HOLDING DATA RECORD

APPENDIX 4. 8260-2, DATA WORKSHEET

Instructions for completing 8260-2, Data Worksheet, for proponents OTHER than the NFPO.

BLOCK 1. REQUESTED PUBLICATION DATE. Enter the desired effective date that coincides with the charting cycle (see Order 8260.26, appendix 1). 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. If offshore and beyond U.S. Domestic Airspace, use OA (Offshore Atlantic), OG (Offshore Gulf), or OP (Offshore Pacific).

BLOCK 5. 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 6. TYPE OF ACTION REQUIRED. Check applicable box to establish, modify, or cancel the fix.

BLOCK 7. 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 8. CHARTING. Indicate required charting; i.e., terminal, SIDs, STARs, or en route charts.

BLOCK 9. 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 10. POINT-OF-CONTACT (POC). Self explanatory.

Form 8260-2, DATA Worksheet

1. REQUESTED PUBLICATION DATE: ______________________

2. FIX NAME: ______________________

3. FIX TYPE: ______________________

4. STATE: ______________________

5. LOCATION: ______________________

6. TYPE OF ACTION REQUIRED: **Establish** ☐ **Modify** ☐ **Cancel** ☐

7. HOLDING: ______________________

____

8. CHARTING: ______________________

9. REMARKS (Use additional paper if required):

---

10. POINT OF CONTACT (POC):

ATC Facility Name.

POC's Name.

Telephone Number.

FAX Number.

E-Mail Address

APPENDIX 5. RADIO FIX

AND HOLDING DATA RECORD,

FAA Form 8260-2

Figure A5-1

RADIO FIX AND HOLDING DATA RECORD

NAME: PROVIDENCE VORTAC **STATE:** RI **COUNTRY:** US

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

PRECIPITOUS TERRAIN ADDITIONS:

PAT	ADDITION
2	88
5	174

HOLDING RESTRICTIONS:
HOLDING LIMITED TO ESTABLISHED PATTERNS

REMARKS:
PRECIPITOUS TERRAIN EVALUATION COMPLETED.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	LOGAN			BOS	BOSTON	MA
DP	WYLYY			BOS	BOSTON	MA
DP	BRADLEY			BDL	WINDSOR LOCKS	MA
DP	HANSCOM			BED	BEDFORD	MA
DP	BEVERLY			BVY	BEVERLY	MA
DP	NORWOOD			OWD	NORWOOD	MA
DP	LAWRENCE			LWM	LAWRENCE	MA
DP	STEWY			ACK	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			BOS	BOSTON	MA
IAP	VOR/DME RWY 15R			BOS	BOSTON	MA
IAP	VOR/DME RWY 27			BOS	BOSTON	MA
IAP	VOR/DME RWY 33			BOS	BOSTON	MA
IAP	VOR/DME RNAV RWY 4R			BOS	BOSTON	MA
IAP	NDB RWY 32			1B9	MANSFIELD	MA
IAP	ILS RWY 5			EWB	NEW BEDFORD	MA
IAP	LOC BC RWY 23			EWB	NEW BEDFORD	MA
IAP	NDB RWY 5			EWB	NEW BEDFORD	MA
IAP	RNAV (GPS) RWY 5			EWB	NEW BEDFORD	MA
IAP	LOC RWY 22			UUU	NEWPORT	RI
IAP	VOR/DME OR GPS RWY 16		2	UUU	NEWPORT	RI
IAP	ILS RWY 16			OQU	NORTH KINGSTOWN	RI
IAP	VOR-A		4	OQU	NORTH KINGSTOWN	RI

FAA FORM 8260-2 / OCT 2006 Page 1 of 2

Figure A5-2

IAP	VOR RWY 34		OQU	NORTH KINGSTOWN	RI
IAP	VOR/DME RNAV RWY 34		OQU	NORTH KINGSTOWN	RI
IAP	LOC RWY 35		OWD	NORWOOD	MA
IAP	VOR-A	1	SFZ	PAWTUCKET	RI
IAP	VOR-B		SFZ	PAWTUCKET	RI
IAP	RNAV (GPS) RWY 5		SFZ	PAWTUCKET	RI
IAP	ILS OR LOC/DME RWY 6		PYM	PLYMOUTH	MA
IAP	RNAV (GPS) RWY 6		PYM	PLYMOUTH	MA
IAP	NDB OR GPS RWY 30		TAN	TAUNTON	MA
IAP	ILS OR LOC RWY 5		PVD	PROVIDENCE	RI
IAP	ILS OR LOC RWY 23		PVD	PROVIDENCE	RI
IAP	ILS RWY 5 CAT II		PVD	PROVIDENCE	RI
IAP	ILS RWY 5 CAT III		PVD	PROVIDENCE	RI
IAP	ILS RWY 34		PVD	PROVIDENCE	RI
IAP	VOR/DME RWY 16		PVD	PROVIDENCE	RI
IAP	VOR/DME RWY 23		PVD	PROVIDENCE	RI
IAP	VOR/DME RWY 34		PVD	PROVIDENCE	RI
IAP	VOR RWY 5		PVD	PROVIDENCE	RI
IAP	VOR RWY 34		PVD	PROVIDENCE	RI
IAP	RNAV (GPS) RWY 5		PVD	PROVIDENCE	RI
IAP	RNAV (GPS) RWY 16		PVD	PROVIDENCE	RI
IAP	VOR RWY 23		GON	GROTON (NEW LONDON)	CT
IAP	RNAV (GPS) RWY 23		GON	GROTON (NEW LONDON)	CT
STAR	GRAYM			BEDFORD	MA
STAR	NEWBE			NANTUCKET	MA
STAR	NORWICH	5	BOS	BOSTON	MA
STAR	SCUPP		BOS	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:** 03/14/2006

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.

ATC COORDINATION: **DATE:** 01/09/2006 **FACILITY:** ZBW **NAME:** MICK CONTROL

INITIATED BY: **DATE:** **ORGANIZATION:** **NAME:**

DEVELOPED BY: **DATE:** 03/14/2006 **OFFICE:** AVN-110 **NAME:** GARY GARMIN

AVN APPROVAL: **DATE:** 04/11/2006 **OFFICE:** AVN-110 **NAME:** MAXWELL MCDONALD

SIGNATURE:

DISTRIBUTION: **NFDC**
FIFO
FPO: BOS
ARTCC: ZBW
ATC FACILITY: PVD APP CON
OTHER:

FAA FORM 8260-2 / OCT 2006

Page 2 of 2

Figure A5-3

RADIO FIX AND HOLDING DATA RECORD

NAME: XMPLE **STATE:** TN **COUNTRY:** US

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	DIST FROM FAC 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	LEG LENGTH DME	HOLDING ALTITUDES MIN	HOLDING ALTITUDES MAX	TEMPLATES MIN	TEMPLATES 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

PRECIPITOUS TERRAIN ADDITIONS:

PAT	ADDITION
1	205
UPN	293

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	AJG	MT CARMEL	TN

REMARKS:
POCKET CITY (FAC 1) AND SAMSVILLE (FAC 2) USED TO ESTABLISH FIX COORDINATES.
PRECIPITOUS TERRAIN EVALUATION COMPLETED.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	JETHRO	1, 2		BUG	BUG TUSSLE	TN
DP	BODINE RNAV			BUG	BUG TUSSLE	TN
EN ROUTE	V7	1, 2				
EN ROUTE	V44	1, 2				
IAP	NDB RWY 18	1, 2, 3	1	AJG	MT CARMEL	TN
IAP	NDB RWY 5	3, 5		DCY	WASHINGTON	TN
IAP	ILS OR LOC RWY 13	1, 6	2	BUG	BUG TUSSLE	TN
IAP	RNAV (GPS) RWY 13		3	BUG	BUG TUSSLE	TN
STAR	CANNONBALL				PIXLEY	TN

FAA FORM 8260-2 / OCT 2006 Page 1 of 2

Figure A5-4

REQUIRED CHARTING: AREA, DP, EN ROUTE LOW, IAP, STAR

COMPULSORY REPORTING POINT: LOW

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 05/11/2006

REASON FOR REVISION:

ATC COORDINATION: **DATE:** 03/23/2006 **FACILITY:** CRC APP CON **NAME:** SEYMOUR PLANES

INITIATED BY: **DATE:** **ORGANIZATION:** **NAME:**

DEVELOPED BY: **DATE:** 05/11/2006 **OFFICE:** AVN-120 **NAME:** ACE TERPSTON

AVN APPROVAL: **DATE:** 06/14/2006 **OFFICE:** AVN-120 **NAME:** FRANK FAIRCHILD

SIGNATURE:

DISTRIBUTION: NFDC
FIFO
FPO: ATL
ARTCC: ZID, ZKC, ZMP
ATC FACILITY: CRC APP CON, AJG ATCT, BUG ATCT
OTHER: TN DOT, CITY OF BUG TUSSLE AVIATION AUTHORITY

FAA FORM 8260-2 / OCT 2006

Page 2 of 2

Figure A5-5

RADIO FIX AND HOLDING DATA RECORD

NAME: HOWTO **STATE:** MO **COUNTRY:** US

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	LEG LENGTH DME	HOLDING ALTITUDES MIN	HOLDING ALTITUDES MAX	TEMPLATES MIN	TEMPLATES MAX
1	NW		WP	347.08	147.08	R	1 1/2	4	3000	24000	5	17

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	200	TOWER (31-1165)	3948.00.34N/0945358.93W	2735	2B

HOLDING RESTRICTIONS:
HOLDING LIMITED TO ESTABLISHED PATTERN.

REMARKS:
PRECIPITOUS TERRAIN COMPLETED.

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:** 01/12/2006

REASON FOR REVISION:

ATC COORDINATION: **DATE:** 11/01/2006 **FACILITY:** STJ APP CON **NAME:** ROGER OVER

INITIATED BY: **DATE:** **ORGANIZATION:** **NAME:**

DEVELOPED BY: **DATE:** 01/12/2006 **OFFICE:** AVN-130 **NAME:** LINDA LINEDRAWER

AVN APPROVAL: **DATE:** 02/29/2006 **OFFICE:** AVN-130 **NAME:** GREGORY GRUMMAN

SIGNATURE:

DISTRIBUTION: NFDC
FIFO
FPO: FTW
ARTCC: ZKC
ATC FACILITY: STJ APP CON,
OTHER: MO AVIATION DIRECTOR

FAA FORM 8260-2 / OCT 2006 Page 1 of 1

THIS PAGE INTENTIONALLY LEFT BLANK

Figure A5-6

RADIO FIX AND HOLDING DATA RECORD

NAME: NITER OM **STATE:** TX **COUNTRY:** US

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		DAL	DALLAS	TX
IAP	ILS Z RWY 13L	1, 2, 3		DAL	DALLAS	TX

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 4 **DATE OF REVISION:** 01/03/2000

REASON FOR REVISION:
FAC 2 COURSE, DISTANCE, MRA AND MAA UPDATED.
FIX USE UPDATED.
LAT/LONG REVISED (MOVED 24 FT.)

ATC COORDINATION: **DATE:** 11/23/1999 **FACILITY:** DAL APP CON **NAME:** TIM MOVER

INITIATED BY: **DATE:** **ORGANIZATION:** **NAME:**

DEVELOPED BY: **DATE:** 01/03/2000 **OFFICE:** AVN-130 **NAME:** ROBERT ROCKWELL

AVN APPROVAL: **DATE:** 02/14/2000 **OFFICE:** AVN-130 **NAME:** BENJAMIN BOEING

SIGNATURE:

DISTRIBUTION: **NFDC**
FIFO
FPO: FTW
ARTCC: ZFW
ATC FACILITY: DAL ATCT, DFW ATCT
OTHER:

FAA FORM 8260-2 / OCT 2006 Page 1 of 1

THIS PAGE INTENTIONALLY LEFT BLANK

Figure A5-7

RADIO FIX AND HOLDING DATA RECORD

NAME: THSWA **STATE:** OK **COUNTRY:** US

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			OUN	NORMAN	OK
IAP	RNAV (GPS) RWY 21			OUN	NORMAN	OK

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 04/10/2006

REASON FOR REVISION:

ATC COORDINATION: **DATE:** 12/25/2006 **FACILITY:** OKC APP CON **NAME:** VICTOR VECTOR

INITIATED BY: **DATE:** **ORGANIZATION:** **NAME:**

DEVELOPED BY: **DATE:** 04/10/2006 **OFFICE:** AVN-110 **NAME:** RACHEAL RULEFOLLOWER

AVN APPROVAL: **DATE:** 07/21/2006 **OFFICE:** AVN-110 **NAME:** CHARLES CESSNA

SIGNATURE:

DISTRIBUTION: **NFDC**
FIFO
FPO: FTW
ARTCC: ZFW
ATC FACILITY: OKC APP CON, OUN ATCT
OTHER:

FAA FORM 8260-2 / OCT 2006 Page 1 of 1

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX 6. ILS AND RNAV STANDARD INSTRUMENT APPROACH PROCEDURE, FAA FORM 8260-3

Figure A6-1

U.S. Department of Transportation
Federal Aviation Administration

RNAV - 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
TRM VORTAC (IAF) (40V) (43A)	CUXIT (TF) (FB) (RNP 1.00) (40E)	327.79/20.69	7000
CUXIT (40E)	HOPLI (TF) (FB) (RNP 1.00) (40E)	327.70/6.50	7000
PSP VORTAC (IAF) (40V) (43A)	VISSU (TF) (FB) (RNP 1.00) (40E)	020.08/7.06	7000
VISSU (40E)	HOPLI (RF) (FB) (RNP 1.00) (40E)	(6.00 NM RADIUS CCW OBUXE)/5.49	7000
SBONO (IAF) (40E) (43A)	YAGUS (TF) (FB) (RN0 1.00) (40E)	252.52/4.67	7000
YAGUS (40E)	CUXIT (RF) (FB) (RNP 1.00) (40E)	(6.00 NM RADIUS CW ODOYI)/7.89	7000
HOPLI (40E)	YOCUL (RF) (FB) (RNP 1.00) (40E)	(5.60 NM RADIUS CCW ONUYI)/4.55	6600
YOCUL (40E)	WASAK (RF) (FB) (RNP 0.30) (40E) (41E)	(5.60 NM RADIUS CCW ONUYI)/6.70	6000

1. PT **NA** SIDE OF COURSE ______ OUTBOUND ______ FT WITHIN ______ MILES OF ______ (IAF)
2. **PROFILE STARTS AT WASAK**
3. FAC: * FAF: *** SEE TERMINAL ROUTES FROM JEXOT** DIST FAF TO MAP: ______ THLD: ______
4. MIN. ALT: **WASAK 6000, LACIV 4400, FIVUT 3800**
5. DIST TO THLD FROM OM: **7.40** MM: ______ IM: ______ 150 HAT: ______ 100 HAT: ______ GS ANT: ______
6. MIN GS INCPT: **2900** GS ALT AT: **JEXOT 2900, NUDCI 1716** OM: ______ MM: ______ IM: ______
7. GS ANGLE: **3.00** TCH: **42.0#** **34:1 IS CLEAR**
8. MSA FROM: **RW13R 12700**

MISSED APPROACH

MAP: DA

CLIMB TO 4000 VIA 130.39 TRACK TO PUVOC, LEFT TURN TO KICEV, 109.88 TRACK TO HUNOL, 109.92 TRACK TO TRM VORTAC AND HOLD.

ADDITIONAL FLIGHT DATA:

HOLD SE, RT, 309.51 INBOUND.
CHART FAS OBST: 487 BUSH 335032N/1163102W,
559 TOWER 335043N/1163124W
CHART: 2079 TERRAIN 334454N/1162717W
CHART: 2613 TERRAIN 333901N/1162050W
DISTANCE TO THLD FROM 277 HAT: 0.74 NM
ROUTE TYPE: A, R
ROUTE TYPE QUALIFIER 1: P
ROUTE TYPE QUALIFIER 2: A, S
#TCH: 493.3 MSL (DO NOT CHART)

CONTINUED ON PAGE 2.

MAG VAR: **13E** EPOCH YEAR: **1990**

MINIMUMS

TAKEOFF: SEE FAA FORM 8260-15A FOR THIS AIRPORT ALTERNATE: N A **X**

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
SPECIAL AIRCRAFT AND AIRCREW AUTHORIZATION REQUIRED															
RNP 0.17 DA	728	1	277	728	1	277	728	1	277	728	1	277			
RNP 0.30 DA	859	1 1/2	408	859	1 1/2	408	859	1 1/2	408	859	1 1/2	408			

NOTES: **CHART NOTES: RF AND GPS REQUIRED. FOR UNCOMPENSATED BARO-VNAV SYSTEMS, PROCEDURE NA BELOW 2C (35F) OR ABOVE 48C (119F). PROCEDURE NA WHEN CONTROL TOWER CLOSED. MISSED APPROACH REQUIRES RNP LESS THAN 1.0.**
CHART PLANVIEW NOTE: PROCEDURE NA FOR ARRIVAL ON TRM VORTAC AIRWAY RADIALS 304 CW 021.
CHART PLANVIEW NOTE: PROCEDURE NA FOR ARRIVAL ON PSP VORTAC AIRWAY RADIALS 329 CW 088.

CHART PLANVIEW NOTE AT PSP VORTAC, TRM VORTAC, AND SBONO: (RNP 0.3)

CHART PLANVIEW NOTE AT PSP VORTAC AND HOPLI: MAX 210 KIAS

CITY AND STATE	ELEVATION: 477 TDZE: 451 / AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP: / AMDT: NONE / DATE
PALM SPRINGS, CA	**PALM SPRINGS INTERNATIONAL**	**RNAV**	**RNAV (RNP) Z RWY 13R, ORIG**	

Figure A6-2

ALL AFFECTED PROCEDURES REVIEWED?	COORDINATES OF FACILITIES	REQUIRED EFFECTIVE DATE
☐ YES ☒ NO		**ROUTINE**

COORDINATED WITH:

ATA	AAT	ALPA	APA	AOPA	NBAA	OTHER (specify)
X		X	X	X	X	X **LAX FPO, PSP ATCT, ZLA, ARPT MGR**

FLIGHT CHECKED BY		
NAME:	FIFO	DATE:
DEVELOPED BY		
NAME:	NFPG **AJW-321**	DATE:
APPROVED BY		
NAME: MANAGER	NFPG **AJW-321**	DATE:

CHANGES:
ORIGINAL PROCEDURE.

REASONS:

APPENDIX 7. RADAR - STANDARD

INSTRUMENT APPROACH PROCEDURE,

FAA FORM 8260-4

Figure A7-1

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	TO	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**

FAA FORM 8260 - 4 / April 2006 (computer generated)   Page   of   Pages

Figure A7-2

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 8. STANDARD

INSTRUMENT APPROACH PROCEDURE,

FAA FORM 8260-5

Figure A8-1.

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

FROM	TO	COURSE AND DISTANCE	ALTITUDE
GLD VORTAC	**OEL NDB**	**099.71/44.08**	**5500**
HLC VORTAC	**OEL NDB**	**244.51/28.86**	**4700**

MISSED APPROACH

MAP: **OEL NDB**

CLIMB TO 4200, THEN CLIMBING RIGHT TURN TO 4700 DIRECT OEL NDB AND HOLD.

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 / AIRPORT NAME	FACILITY IDENTIFIER	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE	
OAKLEY, KS	ELEVATION: **3045** TDZE: **3035** AIRPORT NAME: **OAKLEY MUNI**	**'OEL**	**NDB RWY 34, AMDT 3**	SUP; AMDT **2**; DATE **25 MAY 95**

Figure A8-2.

ALL AFFECTED PROCEDURES REVIEWED?	COORDINATES OF FACILITIES	REQUIRED EFFECTIVE DATE
☒ YES ☐ NO		**ROUTINE**

COORDINATED WITH:

ATA	AAT	ALPA	APA	AOPA	NBAA	OTHER (specify)
☐	☐	☐	☐	☒	☒	☒ **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 9.

SPECIAL INSTRUMENT APPROACH PROCEDURE,

FAA FORM 8260-7

Figure A9-1

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.

If an instrument approach procedure of the above type is conducted at the below named airport, it shall be conducted in accordance with a charted instrument approach procedure predicated on the specifications contained herein and as specified on accompanying FAA form 8260-10, unless an approach is conducted in accordance with a different procedure for such airport authorized by AFS-400. Minimum altitudes shall correspond with those established for en route operation in the particular area or as set forth below.

SPECIFICATION - NOT FOR COCKPIT USE

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
NEWLY (IAF) (40E)(43A)	**RAIDS (TF)(FB)(40E)(41E)(43B)**	**265.17/5.72**	**3000**
RAIDS (IF)(40E)(43I)	**CHUBS (TF)(FB)(40E)(42S)**	**265.11/6.43**	**2500**
CHUBS (40E)(42S)	**OWELL (TF)(FB)(40E)(43F)**	**265.11/3.75**	**2000**
OWELL (FAF)(40E)(43F)	**RW26R (TF) (FO)(40G)(41Y)(43M)**	**265.01/5.70**	
RW26R (MAP)(40G)(41Y)(43M)	**497 MSL (CA)(42M)**		
497 MSL	**CIPOD (DF)(FO)(40E)(41Y)**		
CIPOD (40E)(41Y)	**PEPBI (TF)(FO)(40E)(41E)(43H)**	**342.89/16.98**	**3000**

MISSED APPROACH

MAP: **LPV:NA**
LNAV/VNAV: DA

CLIMB TO 3000, DIRECT CIPOD AND VIA 342.89 TRACK TO PEPBI AND HOLD.

1. PT **NA** SIDE OF COURSE ____ OUTBOUND ____ FT WITHIN ____ MILES OF ____ (IAF)
2. **PROFILE STARTS AT NEWLY**
3. FAC: **265.01** FAF: ____ DIST FAF TO MAP: **5.70** THLD: **5.70**
4. MIN. ALT: **NEWLY 3000, RAIDS 3000*, CHUBS 2500, OWELL 2000**
5. DIST TO THLD FROM OM: ____ MM: ____ IM: ____ 100 HAT: ____ GS ANT: ____
6. MIN GS INCPT: **2000** GS ALT AT: **OWELL 2000** OM: ____ MM: ____ IM: ____
7. GS ANGLE: **3.00** TCH: **59.4**
8. MSA FROM: **RW26R 3100**

ADDITIONAL FLIGHT DATA:
HOLD N, RT, 162.89 INBOUND.
CHART FAS OBST:585 TOWER 300023/0951300
DIST TO THLD FROM 501 HAT 1.39 NM
ROUTE TYPE DESCRIPTION: A, P
APPROACH ROUTE QUALIFIER 2: S

MAG VAR: **5E** EPOCH YEAR: **00**

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
LPV DA		**NA**			**NA**			**NA**			**NA**				
LNAV/VNAV DA	**598**	**6000**	**501**	**598**	**6000**	**501**	**598**	**6000**	**501**	**598**	**6000**	**501**			

NOTES:
CHART PROFILE NOTE: *WHEN ASSIGNED BY ATC, INTERCEPT GLIDEPATH AT RAIDS, 3000.
CHART NOTES: SIMULTANEOUS APPROACH AUTHORIZED WITH RWY 26L AND RWY 27.
SPECIAL AIRCREW AND AIRCRAFT CERTIFICATION REQUIRED.
DME/DME RNP - 0.3 NA
FOR UNCOMPENSATED BARO-VNAV SYSTEMS, LNAV/VNAV NA BELOW -15C (5F) OR ABOVE 49C (120F)
CHART PLANVIEW NOTE: RADAR REQUIRED.

CITY AND STATE	ELEVATION / AIRPORT NAME	FACILITY IDENTIFIER	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE	
HOUSTON, TX	ELEVATION: **97** TDZE: **97** AIRPORT NAME: **GEORGE BUSH INTERCONTINENTAL/HOUSTON**	**RNAV**	**RNAV (GPS) Y RWY 26R, AMDT 1A**	SUP: AMDT: **AMDT1** DATED: **10/27/2005**

FAA FORM 8260 - 7 / April 2006 (computer generated) PAGE **1** OF **2** PAGES

Figure A9-2

NOTES CONTINUED: **CHANGES: ASTERISKS REMOVED FROM ALTITUDE BLOCK IN TERMINAL ROUTES.**
" *2000 WHEN AUTHORIZED BY ATC" NOTE CHANGED TO PROFILE NOTE " *WHEN ASSIGNED BY ATC, INTERCEPT GLIDEPATH RAIDS, 3000."
RADAR REQUIRED PLANVIEW NOTE MOVED TO NOTES BLOCK.
"BARO-VNAV NA" NOTE UPDATED AND INCLUDE MAX TEMP. SEE ATTACHED FAA FORM 8260-10, CONTINUATION SHEET (AFS-410)

AIR CARRIER NOTES:

The procedure on the other side and the foregoing data are hereby:

SUBMITTED BY		
NAME: **NA**	COMPANY **NA**	DATE:
FLIGHT CHECKED BY		
NAME:	FIFO **OKC**	DATE:
DEVELOPED BY		
NAME:	NFPG **AVN-120**	DATE:
RECOMMENDED BY		
NAME: MANAGER	NFPG **AVN-120**	DATE:
APPROVED BY		
NAME:	AFS-400	DATE:

This Special Instrument Approach Procedure shall be conducted in accordance with the instructions specified on the reverse side of this form and the operator's minima as specified in appropriate Letter of Authorization or operations/management specifications. This procedure contains no proprietary information and may be issued to additional users if they are found to meet all criteria and requirements set forth and have been approved by the FAA.

DATE: ______________ RECEIVED FOR THE OPERATOR BY: ______________________________ TITLE: ______________________
SIGNATURE

BY DIRECTION OF THE ADMINISTRATOR ______________________________ ______________________________
SIGNATURE TITLE

EFFECTIVE DATE: ______________________

APPENDIX 10.

STANDARD INSTRUMENT APPROACH

PROCEDURE DATA RECORD,

FAA FORM 8260-9

Figure A10-1

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

PART - A OBSTRUCTION DATA

1. APP SEGMENT	FROM	TO	OBSTRUCTION	COORDINATES	ELEV. MSL	ROC	ALT. ADJUSTMENTS	MIN. ALT.
INITIAL	TRM VORTAC	CUXIT	1. 200' AAO	335757.83N/1161653.04W	5399 (2C)	1000	AC20, PR337, AT	7000
(RNP 1.00)			2. TERRAIN	335629.92N/1161604.18W	5174 (5200)		AS1500	6700
INITIAL S/D	CUXIT	HOPLI	3. 200' AAO	340157.00N/1162100.98W	5718 (2C)	1000	AC20, PR226	7000
(RNP 1.00)			4. TERRAIN	340157.00N/1162100.98W	5518 (5500)		AS1500	7000
INITIAL	PSP VORTAC	VISSU	5. 200' AAO	335834.54N/1161941.25W	4359 (2C)	1000	AC20, PR171, AT	7000
(RNP 1.00)			6. TERRAIN	335734.44N/1162019.25W	4079 (4100)		AS1500	5600
INITIAL S/D	VISSU	HOPLI	3.		5718 (2C)	1000	AC20, PR239	7000
(RNP 1.00)			4.		5518 (5500)		AS1500	7000
INITIAL	SBONO	YAGUS	7. 200' AAO	335140.80N/1160520.37W	5679 (2C)	1000	AC20, PR267	7000
(RNP 1.00)			8. TERRAIN	335140.80N/1160520.37W	5479 (5500)		AS1500	7000
INITIAL S/D	YAGUS	CUXIT	1.		5399 (2C)	1000	AC20, PR239, DG342	7000
(RNP 1.00)			2.		5174 (5200)		AS1500	6700
INITIAL S/D	HOPLI	YOCUL	9. 200' AAO	340210.18N/1162111.84W	5519 (2C)	1000	AC20	6600
(RNP 1.00)			10. TERRAIN	340308.88N/1162120.65W	5062 (5100)		AS1500	6600
INITIAL S/D	YOCUL	WASAK	11. 200' AAO	340709.47N/1162947.50W	4679 (2C)	1000	AC20, DG301	6000
(RNP 0.30)			12. TERRAIN	340709.47N/1162947.50W	4479 (4500)		AS1000**	5500
2. PROCEDURE TURN								
3. MISSED APPROACH MAP:								
ELEV:								

4. CIRCLING	DISTANCE	HT. ABV. ARPT. REQUIRED	ACTUAL
CATEGORY A	1.3 NM	350	
CATEGORY B	1.5 NM	450	
CATEGORY C	1.7 NM	450	
CATEGORY D	2.3 NM	550	
CATEGORY E	4.5 NM	550	

5. MINIMUM SAFE ALTITUDES — PRIMARY NAVAID:

SECTOR	OBSTRUCTION	BRG / DIST	ELEVATION (MSL)	M S A	SECTOR	OBSTRUCTION	BRG / DIST	ELEVATION (MSL)	M S A
									PAGE 1 OF 3

CITY AND STATE	AIRPORT & ELEVATION 477	FACILITY	PROCEDURE AND AMENDMENT NO:	REGION
PALM SPRINGS, CA	PALM SPRINGS INTERNATIONAL	RNAV	RNAV (RNP) Z RWY 13R, ORIG	AWP

FAA Form 8260 - 9 / April 2006 (Computer Generated)

Figure A10-2

PART B - SUPPLEMENTAL DATA

1. COMMUNICATIONS WITH :	2. WEATHER SERVICE		3. ALTIMETER SETTING
	N W S	OTHER:	SOURCE:
	F A A		DISTANCE:
SATISFACTORY ON:	A / C		HOURS REMOTE OPERATION:
V H F / U H F / H F	LOCATION:		ADJUSTMENT:

4. MONITOR STATUS	PRIMARY NAVAID:	
	MONITOR POINT:	
	HRS OPTN:	CAT 1
		CAT 3
5. APPROACH & RUNWAY LIGHTING		ALS
		(S) SALS
		MALS
		HIRL
		MIRL
		REIL
		TDZ
		C/LINE
		OTHER (Specify)
6. RUNWAY MARKINGS	BASIC	
	ALL WEATHER	
	INSTRUMENT	
7. RUNWAY VISUAL RANGE	APPROACH	
	MIDFIELD	
	ROLL OUT	
8. GLIDE PATH	GP ANGLE:	ELEV RWY THRESHOLD:
	DISTANCE FROM RWY:	ELEV GP ANTENNA:
		THRESHOLD CROSSING HEIGHT:
9. FINAL APPROACH COURSE AIMING	RUNWAY THRESHOLD	F T. FROM THRESHOLD
	ON CENTERLINE	F T. FROM CENTERLINE

10. WAIVERS:

PART D - PREPARED BY:	DATE:
TITLE:	OFFICE:

PART C - REMARKS:

****EXISTING AIRSPACE FLOOR 700 FT**

ACT: +1.60C
DELTA ISA LOW: -12.45C
CRITICAL LOW/HIGH TEMP: +2C/+48C
SEE ATTACHED VEB SPREADSHEETS

RNP 0.17
TF/RF DVEB: 2777.64 FT
VEB OCS: 20.09:1

RNP 0.30
TF/RF DVEB: 3712.45 FT
VEB OCS: 20.07:1

**** EXISTING AIRSPACE FLOOR 700'**

#VEB ROC.

% INCLUDES 20/3 AC ADJUSTMENT.

$ INCLUDES 50/20 AC ADJUSTMENT.

SEE ATTACHED DOCUMENTATION FOR VISI OIS & GQS PROTECTION SURFACE MOVEMENT PROCEDURES DUE TO DISPL THLD. WHEN CONTROL TOWER CLOSED, PROCEDURE NA DUE TO UNCONTROLLED SURFACE MOVEMENT.

Figure A10-3

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

PART - A OBSTRUCTION DATA

1. APP SEGMENT	FROM	TO	OBSTRUCTION	COORDINATES	ELEV. MSL	ROC	ALT. ADJUSTMENTS	MIN. ALT.
INTERMEDIATE	**WASAK**	**LACIV**	**13. 200' AAO**	**340538.43N/1163216.86W**	**3559 (2C)**	**513#**	**AC20**	**4100**
(RNP 0.30)			**14. TERRAIN**	**340538.43N/1163216.86W**	**3359 (3400)**		**AS1000****	**4400**
INTERMEDIATE S/D	**LACIV**	**FIVUT**	**15. 200' AAO**	**340118.93N/1163433.60W**	**3079 (2C)**	**500**	**AC20, DG201**	**3800**
(RNP 0.30)			**16. TERRAIN**	**340113.08N/1163518.18W**	**2719 (2700)**		**AS1000****	**3700**
INTERMEDIATE S/D	**FIVUT**	**JEXOT**	**17. 200' AAO**	**335931.05N/1163556.77W**	**2159 (2C)**	**500**	**AC20**	**2700**
(RNP 0.30)			**18. TERRAIN**	**335914.59N/1163559.04W**	**1899 (1900)**		**AS1000****	**2900**
FINAL	**JEXOT**	**NUDCI (FROP)**				**ASC**		**GP 1716**
(RNP 0.17)								
FINAL	**NUDCI**	**RW13R**	**19. BUSH (KPSP0008)**	**335031.51N/1163102.13W**	**487 (1A)**	**VEB**	**MA27%**	**728/277**
(RNP 0.17)								
FINAL	**JEXOT**	**NUDCI (FROP)**				**ASC**		**GP 1716**
(RNP 0.30)								
FINAL	**NUDCI**	**RW13R**	**20. TOWER (05-2579)**	**335043.26N/1163123.76W**	**559 (2C)**	**VEB**	**MA36$**	**859/408**
(RNP 0.30)								
2. PROCEDURE TURN								
3. MISSED APPROACH MAP:								
3. MISSED APPROACH ELEV:								

4. CIRCLING	DISTANCE	HT. ABV. ARPT. REQUIRED	HT. ABV. ARPT. ACTUAL
CATEGORY A	1.3 NM	350	
CATEGORY B	1.5 NM	450	
CATEGORY C	1.7 NM	450	
CATEGORY D	2.3 NM	550	
CATEGORY E	4.5 NM	550	

5. MINIMUM SAFE ALTITUDES — PRIMARY NAVAID:

SECTOR	OBSTRUCTION	BRG / DIST	ELEVATION (MSL)	M S A	SECTOR	OBSTRUCTION	BRG / DIST	ELEVATION (MSL)	M S A
									PAGE 2 OF 3

CITY AND STATE	AIRPORT & ELEVATION 477	FACILITY	PROCEDURE AND AMENDMENT NO:	REGION
PALM SPRINGS, CA	**PALM SPRINGS INTERNATIONAL**	**RNAV**	**RNAV (RNP) Z RWY 13R, ORIG**	**AWP**

FAA Form 8260 - 9 / April 2006 (Computer Generated)

Figure A10-4

PART B - SUPPLEMENTAL DATA

1. COMMUNICATIONS WITH :

SATISFACTORY ON:

VHF | UHF | HF

2. WEATHER SERVICE

NWS | OTHER:

FAA

A/C

LOCATION:

3. ALTIMETER SETTING

SOURCE:

DISTANCE:

HOURS REMOTE OPERATION:

ADJUSTMENT:

4. MONITOR STATUS

PRIMARY NAVAID:

MONITOR POINT:

HRS OPTN: CAT 1

CAT 3

5. APPROACH & RUNWAY LIGHTING

ALS

(S) SALS

MALS

HIRL

MIRL

REIL

TDZ

C/LINE

OTHER (Specify)

6. RUNWAY MARKINGS

BASIC

ALL WEATHER

INSTRUMENT

7. RUNWAY VISUAL RANGE

APPROACH

MIDFIELD

ROLL OUT

8. GLIDE PATH

GP ANGLE: | ELEV RWY THRESHOLD:

DISTANCE FROM RWY: | ELEV GP ANTENNA:

THRESHOLD CROSSING HEIGHT:

9. FINAL APPROACH COURSE AIMING

RUNWAY THRESHOLD | FT. FROM THRESHOLD

ON CENTERLINE | FT. FROM CENTERLINE

10. WAIVERS:

PART D - PREPARED BY: | DATE:

TITLE: | OFFICE:

PART C - REMARKS:

MISSED APPROACH: FAAO 8260.52, PARA 4.2.1 (TELESCOPE)

PRECIPITOUS TERRAIN EVALUATION COMPLETED.

!TOPO MAP STUDY.

RF TURN RADIUS/BANK ANGLE COMPUTATIONS:

SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA
VISSU-HOPLI	8000	250	290.00	7523.3	95.23	6.00	19.85
VISSU-HOPLI	7000	250	285.00	6523.3	85.23	6.00	18.43
YAGUS-CUXIT	8000	250	290.00	7523.3	95.23	6.00	19.85
YAGUS-CUXIT	7000	250	285.00	6523.3	85.23	6.00	18.43
HOPLI-YOCUL	7500	210	241.50	7023.3	90.23	5.60	16.00
HOPLI-YOCUL	7000	210	239.40	6523.3	85.23	5.60	15.35
YOCUL-WASAK	7000	210	239.40	6523.3	85.23	5.60	15.35
YOCUL-WASAK	6600	210	238.56	6323.3	83.23	5.60	14.14
WASAK-LACIV	6000	210	235.20	5523.3	75.23	11.00	7.28
LACIV-FIVUT	4400	210	228.48	3923.3	59.23	11.00	6.27
FIVUT-JEXOT	3800	165	177.54	3323.3	53.23	8.30	5.35
JEXOT-NUDCI	2900	165	174.57	2423.3	50.00	8.30	5.07
PUVOC-KICEV	4000	265	286.20	3523.3	55.23	6.00	15.83

PSP	3352.201N/11625.787W
VISSU	3358.130N/11621.151W
HOPLI	3403.404N/11620.384W
YOCUL	3406.667N/11623.992W
SBONO	3353.615N/11604.824W
YAGUS	3353.247N/11610.413W
CUXIT	3357.256N/11617.798W
TRM	3337.686N/11609.611W
WASAK	3405.545N/11631.467W
LACIV	3401.107N/11634.767W
FIVUT	3359.196N/11635.294W
JEXOT	3356.367N/11635.178W
NUDCI	3353.099N/11633.416W
RW13R	3350.044N/11630.693W
PUVOC	3349.117N/11629.869W
KICEV	3347.652N/11627.996W
HUNOL	3345.476N/11623.967W

RF CENTER POINTS:

OBUXE	3401.412N/11627.196W
ONUYI	3401.545N/11626.742W
ODOYI	3359.239N/11610.987W
OCACU	3357.684N/11622.193W
OPOME	3358.057N/11625.408W
OYUGU	3352.699N/11624.083W

Figure A10-5

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

PART - A OBSTRUCTION DATA

1. APP SEGMENT	FROM	TO	OBSTRUCTION	COORDINATES	ELEV. MSL	ROC	ALT. ADJUSTMENTS	MIN. ALT.
MISSED APPROACH	DA	RW13R (40:1)	19.		487 (1A)	ASC		
(RNP 0.17)		LEVEL SURFACE	21. ASR (KPSP0025)	335005.28N/1163022.67W	516 (1A)	1000	AC3	1600
		AIRSPACE	22. TERRAIN	335007.12N/1163037.87W	451 (500)		AS1500	2000
MISSED APPROACH	DA	RW13R (40:1)	20.		559 (2C)	ASC		
(RNP 0.30)		LEVEL SURFACE	20.		559 (2C)	1000	AC20	1600
		AIRSPACE	22.		451 (500)		AS1500	2000
MISSED APPROACH	RW13R	PUVOC (40:1)				ASC		
(RNP 0.30)		LEVEL SURFACE	23. TOWER (05-1947)	334803.00N/1163028.00W	536 (1A)	1000	AC3	1600
		AIRSPACE	24. TERRAIN (RW13R)	335002.62N/1163041.60W	451 (500)		AS1500	2000
MISSED APPROACH	PUVOC	KICEV (40:1)				ASC		
(RNP 0.60)		LEVEL SURFACE	25.GROUND(KPSP0048)	334706.73N/1162929.26W	833 (1A)	1000	AC3	1900
		AIRSPACE	25.		833 (800)		AS1500	2300
MISSED APPROACH	KICEV	HUNOL (40:1)				ASC		
(RNP 0.60)		LEVEL SURFACE	26. 200' AAO	334431.09N/1162607.20W	1439 (2C)	1000	AC20	2500
		AIRSPACE	27. TERRAIN	334431.09N/1162607.20W	1239 (1200)		AS1500	2700
MISSED APPROACH	HUNOL	TRM VORTAC (40:1)				ASC		4000
(RNP 1.00)		LEVEL SURFACE	28. 200' AAO	334130.85N/1162014.50W	2152 (2C)	1000	AC20	3200
		AIRSPACE	29. TERRAIN	334130.85N/1162014.50W	1952 (2000)		AS1500	3500
2. PROCEDURE TURN	NA							
3. MISSED APPROACH	MAP: DA (SEE ABOVE)							
	ELEV: 488/566							

4. CIRCLING	DISTANCE	HT. ABV. ARPT. REQUIRED	HT. ABV. ARPT. ACTUAL
CATEGORY A	1.3 NM	350	NA
CATEGORY B	1.5 NM	450	NA
CATEGORY C	1.7 NM	450	NA
CATEGORY D	2.3 NM	550	NA
CATEGORY E	4.5 NM	550	

5. MINIMUM SAFE ALTITUDES — PRIMARY NAVAID: **RW13R**

SECTOR	OBSTRUCTION	BRG / DIST	ELEVATION (MSL)	M S A	SECTOR	OBSTRUCTION	BRG / DIST	ELEVATION (MSL)	M S A
360-360	200' AAO	302.52/22.29	11699 (2C)!	12700					
									PAGE 3 OF 3

CITY AND STATE	AIRPORT & ELEVATION 477	FACILITY	PROCEDURE AND AMENDMENT NO:	REGION
PALM SPRINGS, CA	PALM SPRINGS INTERNATIONAL	RNAV	RNAV (RNP) Z RWY 13R, ORIG	AWP

FAA Form 8260 - 9 / April 2006 (Computer Generated)

Figure A10-6

PART B - SUPPLEMENTAL DATA

1. COMMUNICATIONS WITH :	2. WEATHER SERVICE		3. ALTIMETER SETTING
PSP TOWER **PSP APPROACH** **ZLA**	N W S	OTHER: **ASOS**	SOURCE: **KPSP**
	F A A		DISTANCE: **0**
SATISFACTORY ON:	A / C		HOURS REMOTE OPERATION: **0**
X VHF · X UHF · HF	LOCATION: **ON ARPT**		ADJUSTMENT: **0**

4. MONITOR STATUS	PRIMARY NAVAID:		
	MONITOR POINT:		
	HRS OPTN:	CAT 1	
		CAT 3	
5. APPROACH & RUNWAY LIGHTING		ALS	
		(S) SALS	
		MALS	
	X	HIRL **13R, 31L**	
	X	MIRL **13L, 31R**	
	X	REIL **13R, 31L, 13L, 31R**	
		TDZ	
		C/LINE	
		OTHER (Specify) **VASI (V6L) 13R, 31L** **PAPI (P4L) 13L, 31R**	
6. RUNWAY MARKINGS	BASIC **BSC-G 13L, 31R**		
	ALL WEATHER **PIR-G 13R, 31L**		
	INSTRUMENT		
7. RUNWAY VISUAL RANGE	APPROACH		
	MIDFIELD		
	ROLL OUT		
8. GLIDE PATH	GP ANGLE: **3.00**	ELEV RWY THRESHOLD: **451.3 (DRWT)**	
	DISTANCE FROM RWY:	ELEV GP ANTENNA:	
		THRESHOLD CROSSING HEIGHT: **42.0**	
9. FINAL APPROACH COURSE AIMING	X	RUNWAY THRESHOLD	F T. FROM THRESHOLD
	X	ON CENTERLINE	F T. FROM CENTERLINE

10. WAIVERS: **NONE**

PART D - PREPARED BY: **JAMES S. CECIL**	DATE: **06/16/2006**
TITLE: **FLIGHT PROCEDURES PROGRAM EVALUATION SPECIALIST**	OFFICE: **AVN-101**

PART C - REMARKS:
DEVELOPED IAW FAAO 8260.52
VGSI GPA/TCH USED FOR PROCEDURE DESIGN.
RW13R THLD DISPLACED 3000 FT.
ALT MINS NA PER AFS-420.
CONTINGENCY BACKUP ALSTG SOURCE NOT ESTABLISHED. NO AVAILABLE BACKUP WITHIN 5 NM; PROCEDURE NA WITH RASS.

Figure A10-7

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

PART - A OBSTRUCTION DATA

1. APP SEGMENT	FROM	TO	OBSTRUCTION	COORDINATES	ELEV. MSL	ROC	ALT. ADJUSTMENTS	MIN. ALT.
FEEDER	GLD VORTAC	OEL NDB	1. TOWER (17-1281)	392324.00N/1013337.00W	4304 (5D)	1000	AT	5500
			2. TERRAIN	391915.00N/1014333.00W	3708 (3700)		AS 1500	5200
FEEDER	HLC VORTAC	OEL NDB	3. TOWER (17-1458)	390920.00N/1004025.00W	3349 (5D)	1000	AT	4700
			4. TERRAIN	391015.00N/1005021.00W	3055 (3100)		AS 1500	4600
FINAL	10 NM	OEL NDB	5. TOWER (17-2154)	385733.00N/1005110.00W	3425 (5D)*	350	AC 50 SA -192	3640
	OEL NDB	10 NM	6. TOWER (17-0091)	390707.00N/1005112.00W	3445 (4D)	1000	AT	4700
2. PROCEDURE TURN			7. TERRAIN	390442.00N/1005621.00W	3114 (3100)		AS 1500	4600
3. MISSED APPROACH — MAP:	OEL NDB	OEL NDB				ASC		4700
			8. TOWER (17-0850)	390916.33N/1005216.37W	3301 (2C)	1000		4400
ELEV:	3290		9. TERRAIN	391018.00N/1005218.00W	3084 (3100)		AS 1500	4600

4. CIRCLING	DISTANCE	HT. ABV. ARPT. REQUIRED	HT. ABV. ARPT. ACTUAL	OBSTRUCTION	COORDINATES	ELEV. MSL	ROC	ALT. ADJUSTMENTS	MIN. ALT.
CATEGORY A	1.3 NM	350	595	10. POLE (KOELA004)	390608.73N/1004838.35W	3069 (1A)	300	SI	3640
CATEGORY B	1.5 NM	450	595	10.		3069 (1A)	300	SI	3640
CATEGORY C	1.7 NM	450	755	6.		3445 (4D)	300	AC 50	3800
CATEGORY D	2.3 NM	550							
CATEGORY E	4.5 NM	550							

5. MINIMUM SAFE ALTITUDES — PRIMARY NAVAID: OEL NDB

SECTOR	OBSTRUCTION	BRG / DIST	ELEVATION (MSL)	M S A	SECTOR	OBSTRUCTION	BRG / DIST	ELEVATION (MSL)	M S A
260-360	TOWER (17-1046)	281/26.4	4183 (5D)	5200					
360-260	200'AAO	266/27.8	3622 (4E)	4700					

CITY AND STATE	AIRPORT & ELEVATION 3045	FACILITY	PROCEDURE AND AMENDMENT NO:	REGION
OAKLEY, KS	OAKLEY MUNI	OEL NDB	NDB RWY 34, AMDT 3	ACE

FAA Form 8260 - 9 / April 2006 (Computer Generated)

Figure A10-8

PART B - SUPPLEMENTAL DATA

1. COMMUNICATIONS WITH :	2. WEATHER SERVICE	3. ALTIMETER SETTING
ZDV	NWS / FAA / A/C — OTHER: **AWOS-3**	SOURCE: **KOEL/KGLD**
		DISTANCE: **44.01**
SATISFACTORY ON:		HOURS REMOTE OPERATION: **24**
X VHF X UHF HF	LOCATION: **ON AIRPORT**	ADJUSTMENT: **186.77**

4. MONITOR STATUS	PRIMARY NAVAID: **OEL NDB**	
	MONITOR POINT: **POLICE DEPT**	
	HRS OPTN: CAT 1	**24**
	HRS OPTN: CAT 3	
5. APPROACH & RUNWAY LIGHTING		ALS
		(S) SALS
		MALS
		HIRL
	X	MIRL **16, 34 (PCL)**
		REIL
		TDZ
		C/LINE
		OTHER (Specify)
6. RUNWAY MARKINGS	BASIC **NRS-G 16**	
	ALL WEATHER	
	INSTRUMENT **NPI-G 34**	
7. RUNWAY VISUAL RANGE	APPROACH	
	MIDFIELD	
	ROLL OUT	
8. GLIDE PATH	GP ANGLE:	ELEV RWY THRESHOLD: **3018.7**
	DISTANCE FROM RWY:	ELEV GP ANTENNA:
		THRESHOLD CROSSING HEIGHT:
9. FINAL APPROACH COURSE AIMING	RUNWAY THRESHOLD **2,993.81**	F T. FROM THRESHOLD
	X ON CENTERLINE	F T. FROM CENTERLINE

10. WAIVERS: **NONE**

PART D - PREPARED BY:	DATE: **12/16/2005**
TITLE: **AERONAUTICAL INFORMATION SPECIALIST**	OFFICE: **AVN-120**

PART C - REMARKS:

AWOS-3 IS NOT ON SERVICE A, KGLD ASOS IS ON SERVICE A.
VDP NOT ESTABLISHED - FACILITY DOES NOT HAVE DME.

PARA 251, 20:1 PENETRATION:
KOELA005 3031 RD (N) 390608.84N/1004857.14W 11.88'

PARA 251, 34:1 PENETRATION:
KOELA005 3031 RD (N) 390608.84N/1004857.14W 12.05'
KOELA003 3030 BUSH 390607.60N/1004846.58W 2.74'

SEE ATTACHED AIRSPACE LETTER.

PRECIPITOUS TERRAIN EVALUATION COMPLETED.

RASS (PRESSURE PATTERNS SAME)
KOEL (3045 MSL)
KGLD (3656 MSL)

BACKUP ALTIMETER SOURCE PUBLISHED BY NOTE, ALL MDA'S RAISED 200FT IAW 8260.19 PARA 854m(4)(g).

*** 3425 TOWER (17-2154) LOCATED 3819.44 FT FROM INNER EDGE OF SECONDARY, HORIZONTAL AND VERTICAL ADVERSE ASSUMPTION APPLIED.**

APPENDIX 11.

STANDARD INSTRUMENT APPROACH PROCEDURE

CONTINUATION SHEET,

FAA FORM 8260-10

Figure A11-1

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION
RNAV (GPS)
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.

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: 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	

FAA FORM 8260 - 10 / April 2006 (Computer Generated)   Page of Pages

Figure A11-2

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 A11-3

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION
RNAV (GPS)
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  1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ----------------------------------------------------------------------------------------------------------------------------------------
        SUSAD       TXK   K4011630VTHA N33304997W094042367    N33304997W094042367E0070002702     NAWTEXARKANA

                1         2         3         4         5         6         7         8         9         0         1         2         3
WP      1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ----------------------------------------------------------------------------------------------------------------------------------------
        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 1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ----------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KTXKK4ATXK     0      052YHN33271340W093592770E005000390          1800018000C    MNAW    TEXARKANA REGIONAL-WEBB FIELD

                1         2         3         4         5         6         7         8         9         0         1         2         3
SEGMENT 1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ----------------------------------------------------------------------------------------------------------------------------------------
        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  1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ----------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KTXKK4GRW13    0045591300 N33273187W093593182+0500          00362064154100
```

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	

FAA FORM 8260 - 10 / April 2006 (Computer Generated) Page of Pages

Figure A11-4

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 A11-5

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION
RNAV (GPS)
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      12345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------
        SUSAP KTXKK4PR13   RW13 001 0000W13A0N3327318700W09359318200+008340300N3326287500W0935816520010675136000054OF4005001E25CEDC
        SUSAP KTXKK4PR13   RW13 002       +01103+01103W13A      87099          000

                 1         2         3         4         5         6         7         8         9         0         1         2         3
MSA     12345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------
        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
TEXARKANA, AR	TEXARKANA REGIONAL-WEBB FIELD	RNAV	RNAV (GPS) RWY 14, ORIG	DATED:

FAA FORM 8260 - 10 / April 2006 (Computer Generated) Page of Pages

Figure A11-6

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 A11-7

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION
RNAV (GPS)
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	

FAA FORM 8260 - 10 / April 2006 (Computer Generated)

Page of Pages

Figure A11-8

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 A11-9

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.

TERMINAL ROUTES (CONT'D)

FROM	TO	COURSE AND DISTANCE	ALTITUDE
CUPOL (40E)	HIXOV (RF) (FB) (RNP 1.00) (40E)	(4.70 NM RADIUS CW IYIRI)/5.78	6000
PSP VORTAC (IAF) (40V) (43A)	HIXOV (TF) (FB) (RNP 1.00) (40E)	105.60/10.95	6000
HIXOV (40E)	TEVUC (RF) (FB) (RNP 1.00) (40E) (41E)	(4.70 NM RADIUS CW IYIRI)/16.72	4300
TEVUC (IF) (40E) (43I)	JISOP (TF) (FB) (RNP 0.30) (40E) (43F)	309.48/4.53	2900
JISOP (FAF) (40E) (43F)	OCAYU (TF) (FO) (RNP 0.30) (40E) (41Y) (43M)	309.45/7.27	
OCAYU (MAP) (40E) (41Y) (43M)	1500 MSL (CA) (42M)	309.45	
1500 MSL	TRM VORTAC (DF) (FO) (40V) (41E) (43H)		4000

ADDITIONAL FLIGHT DATA (CONT'D):

CHART MAXIMUM ALTITUDE IN PLANVIEW AT PSP VORTAC 11000, HIXOV 6800, BALDI 12100, CUPOL 8800, CONES 12000, SHADI 15600, TRM VORTAC 5800, WARNE 12700, HUPAX 8200, NACIV 7300, LICEG 5600.

NOTES (CONT'D):

CHART PLANVIEW NOTES AT BALDI: RF REQUIRED. PROCEDURE NA V64 W BND
CHART PLANVIEW NOTE AT WARNE: RF REQUIRED

CITY AND STATE	ELEVATION: 477 TDZE: 430 / AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP: / AMDT: NONE / DATED:
PALM SPRINGS, CA	PALM SPRINGS INTERNATIONAL	RNAV	RNAV (RNP) Y RWY 31L, ORIG	

FAA FORM 8260 - 10 / April 2006 (Computer Generated) Page 2 of 2 Pages

Figure A11-10

ALL AFFECTED PROCEDURES REVIEWED?	COORDINATES OF FACILITIES	REQUIRED EFFECTIVE DATE
☐ YES ☒ NO		ROUTINE

COORDINATED WITH:

ATA	AAT	ALPA	APA	AOPA	NBAA	OTHER (specify)
X		X	X	X	X	X LAX FPO, PSP ATCT, ZLA, ARPT MGR

FLIGHT CHECKED BY		
NAME:	FIFO **SAC**	DATE: **10/19/2005**

DEVELOPED BY		
NAME:	NFPG **AVN-101**	DATE:

APPROVED BY		
NAME:	NFPG **AVN-101**	DATE:

CHANGES:
ORIGINAL PROCEDURE.

REASONS:

THIS IS A CORRECTED COPY OF THE FORM DEVELOPED ON OCTOBER 25, 2005.

CHANGES: TERMINAL ROUTES - REVISED WAYPOINT DESCRIPTION CODES:
SHADI - TRM VORTAC, "TO" COLUMN: ADDED "(43A)"
TRM VORTAC - TEVUC, "FROM" COLUMN: ADDED "(43A)"
PSP VORTAC - HIXOV, "FROM" COLUMN: ADDED "(43A)"
TEVUC - JISOP, "FROM" COLUMN: CHANGED "(43B)" TO READ "(43I)"
OCAYU - 1500 MSL, "FROM" COLUMN: CHANGED "(40G)" TO READ "(40E)"
1500 MSL - TRM VORTAC, "TO" COLUMN: ADDED "(41E)"

Figure A11-11

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

Special

INSTRUMENT APPROACH PROCEDURE

FLIGHT STANDARDS SERVICES   SPECIAL INSTRUMENT PROCEDURE

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.

Classification: Training and Operational Information Requirements

Instrument Procedure Requirements: This procedure applies GPS nonprecision criteria to operations at a high elevation airport with precipitous terrain.

Operator Requirements: The operator must provide each pilot (and dispatcher, if appropriate) assigned to conduct operations using this approach procedure with ground and flight training and operational information to safely conduct this nonprecision approach procedure to the Aspen-Pitkin County/Sardy Field, Aspen, Colorado (KASE). This training and operational information shall include, but is not limited to: procedure flight profile, airfield lighting and marking, close-in obstacles and nearby terrain, transition from IMC to VMC, use of visual cues in reduced visibility, determining and applying aircraft approach, landing and missed approach climb performance (including the effects of wind, density altitude, aircraft configuration, and gross weight), aircraft control and performance during steep approaches in reduced visibility, crewmember duties and aeronautical decision-making.

Inspector Guidance: The cognizant Principle Operations Inspector (POI) shall evaluate the operator's proposed training program, and, if applicable, General Operations Manual, checklists, or other operational documents, to determine their suitability for supporting safe IFR operations using this Instrument Approach Procedure (see Operator Requirements, above).

CITY AND STATE	ELEVATION: 7820 TDZE: 7737 / AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP: / AMDT: None / DATED:
Aspen, CO	Aspen-Pitkin County/Sardy Field	RNAV	RNAV (GPS) Z Rwy 15, Original	

FAA FORM 8260 - 10 / April 2006 (Computer Generated)   Page 1 of 1 Pages

Figure A11-12

ALL AFFECTED PROCEDURES REVIEWED?	COORDINATES OF FACILITIES	REQUIRED EFFECTIVE DATE
☐ YES ☐ NO		

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:

APPENDIX 12.

FINAL APPROACH SEGMENT (FAS)

DATA BLOCK CYCLIC REDUNDANCY

CHECK (CRC) REQUIREMENTS

APPENDIX 12. FINAL APPROACH SEGMENT (FAS) DATA BLOCK CYCLIC REDUNDANCY CHECK (CRC) REQUIREMENTS

Content of the FAS Data Block. Each FAS data block contains 21 elements (fields) (19 elements for LAAS) 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 the NFPO, the following FAS Data Block information must be documented on FAA Form 8260-10, Continuation Sheet, especially prepared for that purpose (see figures A12-1 and 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.

1. Fields needed for the Final Approach Segment (FAS) Data Block record for approaches using WAAS (LPV minima) and are included in the CRC wrap:

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	5 characters	Alphanumeric
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/FTP Latitude	11 characters	Alphanumeric
LTP/FTP Longitude	12 characters	Alphanumeric
LTP/FTP Ellipsoidal Height	6 characters	Signed Integer
FPAP Latitude	11 characters	Alphanumeric
FPAP Longitude	12 characters	Alphanumeric
Threshold Crossing Height (TCH)	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 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).

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.

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) (LAAS procedures)	3 characters	Numeric
Vertical Alert Limit (VAL) (LAAS procedures)	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. For GBAS applications, this data is ignored.

Example: 0 (WAAS)

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 fifth character is used where needed to indicate a left (L), right (R), or center (C). Helicopters are indicated by HEL0 without a number (the runway number is 0 as used to calculate the CRC).

Examples:

RW26R, RW 08L, RW18C, RW02, HEL0

e. 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. Leave blank (null) for LAAS procedures. Other values are reserved for future use.

Example: 0 = LPV and LP

f. Route Indicator. A single alpha character (A through Z or blank, omitting I and O) used to differentiate between multiple final approach segments to the same runway or heliport. The first approach to a runway is labeled “Z.” Additional alpha characters are incrementally assigned.

Example: Z, Y, X, etc.

g. Reference Path Data Selector (RPDS). A number (0-48) that enables automatic tuning of a procedure by LAAS avionics. The number is related to the frequency of the VHF data broadcast and a 5-digit tuning identifier. The future ICAO SBAS SARPS will provide further information. Always "0" for WAAS operations.

Example: 0

h. Reference Path Identifier. A four-character identifier that is used to confirm selection of the correct approach procedure. This identifier is defined with a “W” signifying WAAS followed by the runway number. For ground based augmentation systems (e.g., LAAS) the identifier is defined with a “G” followed by 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.
G09A & G09B would define the two unique FAS data blocks to RWY 09L.
G09D would be used to define the FAS data block for RWY 09C.
G09E & G09F would be used to define the FAS data blocks for RWY 09R.

Note: 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.

i. Landing Threshold Point (LTP)/Fictitious Threshold Point (FTP) - Latitude. Represents the latitude of the threshold defined in WGS-84 coordinates and entered to five ten-thousandths of an arc second (The last digit must be rounded to either an 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

j. Landing Threshold Point (LTP)/Fictitious Threshold Point (FTP) - Longitude. Represents the longitude of the threshold defined in WGS-84 coordinates and entered to five ten-thousandths of an arc second (The last digit must rounded to either an 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

k. LTP/FTP Height Above Ellipsoid (HAE). The height expressed in meters reference the WGS-84 ellipsoid, obtained from an official government source. This information is identified in the ASIS database as “Ellipsoid Elevation” and is in “feet” and must be converted to “meters.” The first character is a + or – and the resolution value is in tenths of a meter with the decimal point suppressed. Use the FTP HAE for offset procedures.

Example:

+00356 (+35.6m), -00051(-5.1m), +01566 (+156.6m), -00022 (-2.2m)

l. 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 coordinates and entered to five ten-thousandths of an arc second (The last digit must be rounded to either an 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

m. FPAP - Longitude. The longitude of the runway FPAP is defined in WGS-84 coordinates and entered to five ten-thousandths of an arc second (The last digit must be rounded to either an 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

n. 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 TERPS table 18A.

Example:

00055.0 (55.0 feet); 00042.0 (42.0 feet)

o. TCH Units Selector. This character defines the units used to describe the TCH.

Example:

F = feet M = meters

p. Glidepath Angle. The angle of the approach path (glidepath) with respect to the horizontal plane defined according to WGS-84 at the LTP/FTP. It is specified in degrees.

Example:

02.75 (2.75°), 06.20 (6.20°), 03.00 (3.00°)

q. Course Width at Threshold. The semi-width (in meters) of the lateral course at the LTP/FTP, defining the lateral offset at which the receiver will achieve full-scale deflection. In combination with the distance to the FPAP, the course width defines the sensitivity of the lateral deviations throughout the approach. The allowable range varies from 80m to 143.75m. See Order 8260.54, paragraph 2.11, to determine course width. When the LPV procedure is designed to overlie an ILS/MLS procedure, use the course width at threshold value from the flight inspection report of the underlying (ILS/MLS) system. If the Localizer course width at threshold is less than 80m, use 80m as the default value. For offset procedures, use the course width at the FTP.

Note: When the runway number is set to 00 (for circling approaches), then the course width field is ignored and the course width is 38 meters.

Example: 106.75

r. 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 2,032 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

s. 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 A11-1 and A11-2).

Example:

CRC Remainder: E104FC14

t. 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 A11-3. Alaska, Hawaii, and U.S. Possessions will be as described in the ICAO Doc 7910.

Example:

K1, K7, PH, PA, MM, ER

u. 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)

v. Horizontal Alert Limit (HAL). The HAL is the radius of a circle in the horizontal plane (the local plane tangent to the WGS-84 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 developed using Order 8260.50 is a fixed value at 40.0 meters.

Note: A HAL is not part of the FAS data block/CRC wrap for LAAS procedures.

Example: HAL 40.0

w. 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 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 meters 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 35 meters will be used.

Note 1: A VAL of 00.0 indicates that the vertical deviations should 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 LAAS procedures.

Example:

VAL 50.0 VAL 35.0

Figure A12-1

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION
RNAV (GPS)
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.

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: 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	

FAA FORM 8260 - 10 / April 2006 (Computer Generated) Page of Pages

Figure A12-2

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 A12-3. ICAO Code Numbers

APPENDIX 13.

ARINC 424 DATABASE CODES

APPENDIX 13. 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 851**.**

Figure A13-1. Waypoint Description Codes

Waypoint Description Type/ Function	***Enroute, STAR, APRCH for the line "Airport asWaypoint"* 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. Source/ Content: Valid contents for the "Waypoint Description Code" are contained in figure A13-1. 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 way-points. 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 figure A13-1:

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 MLS/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 rack 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.

Directive Feedback Information

Please submit any written comments or recommendations for improving this directive, or suggest new items or subjects to be added to it. Also, if you find an error, please tell us about it.

Subject: Order 8260.19D, Flight Procedures and Airspace

To: DOT/FAA
Flight Procedure Standards Branch, AFS-420
P.O. Box 25082
Oklahoma City, OK 73125

(Please check all appropriate line items)

☐ An error (procedural or typographical) has been noted in paragraph _______ on page ______.

☐ Recommend paragraph ______ on page ______ be changed as follows:
(*attach separate sheet if necessary*)

☐ In a future change to this directive, please include coverage on the following subject:
(*briefly describe what you want added*):

☐ Other comments:

☐ I would like to discuss the above. Please contact me.

Submitted by: ______________________________ Date: __________________

FTS Telephone Number: _________________________________ Routing Symbol: ________

FAA Form 1320-19 (8-89)