CHANGE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

National Policy

8260.19D
CHG 2

Effective Date:
March 12, 2009

SUBJ: Flight Procedures and Airspace

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

2. 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 (AJR-32), the National Flight Procedures Office (AJW-32), Airspace and Rules Group (AJR-33), the National Aeronautical Charting Office (AJW-352), and the National Airway Systems Engineering Group (AOS-200); 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 (AEU-1); to all Flight Standards Field Offices; Special Mailing List ZVN-826; and Special Military and Public Addressees.

3. EFFECTIVE DATE. March 12, 2009

4. EXPLANATION OF CHANGES. Significant areas of new direction, guidance, policy, and criteria as follows:

a. TABLE OF CONTENTS. Updates Table of Contents to coincide with the pages changed.

b. CHAPTER 1.

(1) Paragraph 105a. Deleted FAA Form 8260-15D and 8260-21D. Modified FAA Form 8260-21A, by removing reference to the United States Air Force.

(2) Paragraph 111f. Revised Flight Procedure Implementation and Oversight Branch's (AFS-460) responsibilities.

(3) Paragraph 112. Revised per All Weather Operations Program Manager's recommendation.

c. CHAPTER 2.

(1) Section 6. Expands guidance regarding NOTAMs.

(2) Paragraph 264. Added Lead Radials, Bearings, or DMEs.

(3) Paragraph 274a(2)(d). Added "Proceed VFR Transition Area" as an AAO exempt area.

d. CHAPTER 4.

(1) Paragraph 404. RESERVED subparagraphs 404k, 404m, 404n, and 404o.

(2) Paragraph 445. Added new paragraph identifying guidance for releasing Special instrument procedure information.

e. CHAPTER 5. Several editorial changes were made to support inadvertent omissions that were in previous versions. There were no significant changes.

f. CHAPTER 7. Numerous editorial changes were made.

g. CHAPTER 8. Numerous editorial changes were made. Adopted changes to support requirements to define threshold elevation, where required.

(1) Paragraph 805i(4). Revised for clarification.

(2) Paragraph 841g(2). Expanded guidance for RNAV holding.

(3) Paragraph 854m(4)(g). Revised rounding of part-time altimeter adjustment values.

(4) Paragraph 855k. Added guidance on "Fly Visual."

(5) Paragraph 856d(5). Added copter limitations.

(6) Paragraph 857x. Added ceiling requirement to support TERPS, when needed.

(7) Paragraph 858e. Revised processing requirements involving amending instrument procedures.

(8) Paragraph 860c(13). Added for Copter Proceed VFR and VPF penetrations.

(9) Paragraph 860c(14). Added documentation for nonstandard tailwind component.

(10) Paragraph 860c(15). Added documentation requirement for nonstandard bank angle.

(11) Paragraph 860c(16). Added documentation requirement for when a route width reduction is taken for helicopter operations.

(12) Paragraph 860c(17). Added documentation requirement for when a turn is required at the missed approach point that is less than 400 ft AGL.

(13) Paragraph 872b(2). Revised FAA Form 8260-15 instructions.

h. APPENDIX 1. Added Airport Improvement Program (AIP).

i. APPENDIX 6. Updated figure A6-1.

j. APPENDIX 12. Several editorial (grammatical) changes.

k. APPENDIX 13. Added placeholder for new Helicopter operations criteria for final approach segment (FAS) data block cyclic redundancy check (CRC) requirements.

l. APPENDIX 14. Updated with new appendix number and references.

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Original Signed by
John W. McGraw

John M. Allen
Director, Flight Standards Service

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FAA Form 8260-21C	U.S. Army/U.S. Air Force Departure (Data Record)

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 Procedure Standards Branch, **AFS-420,** is the principal element within the division, with respect to the rulemaking process of the flight procedures program; also with respect to the development, application, and oversight of national policies and directives for the administration of the national flight procedures program; and development of criteria pertinent to the design of instrument flight procedures. This branch serves as the focal point within Flight Standards for all matters relating to airspace 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 principle element within the division, with respect to FAA Instrument Flight Procedures (IFP) and Flight Inspection policy oversight. This branch develops policy and provides oversight of the IFP development process for government and non-government service providers. This oversight includes clarifying procedure criteria, confirming procedure development data, conducting simulator evaluations, and monitoring validation flights. AFS-460 develops policy for flight validation of IFPs and manages the program for the review and approval of all Special IFP and Waivers to design criteria and standards. This branch develops standards to ensure the orderly processing of all approved IFPs and evaluates the implementation of these standards and practices to determine compliance with established policy. In addition to flight procedure oversight, AFS-460 works with other government agencies, the military, aviation industry leaders, and the international community to improve aviation safety by assisting in the IFP development process worldwide.

g. The Performance Based Navigation Branch, AFS-470, is the principal element within the division, with respect to performance based navigation across all domains. Develops performance based navigation concepts, policies, standards, criteria, requirements, specifications, and limitations for new aircraft and new and existing airborne, ground-based and space-based systems used in instrument flight operations. Develops and issues 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. The RFSDs' All Weather Operations Program Managers (AWOPMs) are assigned specific task processes and derive their guidance for determining appropriate signature level and task responsibilities as specified by the AWO Job Task Analysis.

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. Supporting national programs under the direction of AFS-400 such as the Required Navigation Performance/Special Aircraft And Aircrew Required (RNP/SAAAR) IAP program.

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

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

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

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

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

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

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

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

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

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

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

a. AJW-3 is the principal element within the Technical Operations Services (AJW-0) directly responsible for the in-flight inspection of air navigation facilities 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, 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, *Flight Procedures Management Program***.**

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

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

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

(6) Coordinating with applicable Air Traffic Service Areas to select a charting date consistent with priorities and workload when a component of the 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-0) 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-0).

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 INSTRUMENT FLIGHT PROCEDURES.

a. Requests for approval and/or establishment 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, Vol. 1, chapter 1, paragraph 121.

b. All requests for public-use instrument flight procedures received by any FAA office must be forwarded to the Flight Procedures Office (FPO) 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 AGREEMENT.

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 pre-flight 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 FPO. The RFSD must review noise abatement procedures for aircraft performance characteristics and operational safety considerations. The FPO 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 FPOs. 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, S*pectrum Management Regulations and Procedures Manual*. The Regional Frequency Management Officer (FMO) primarily uses this order. Order 6050.32 also contains information to facilitate understanding and coordination of operational considerations associated with expanded service volumes.

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

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 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. DME/VOR/VORTAC/TACAN.

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

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

Figure 2-1. Standard Class L/H Service Volume.

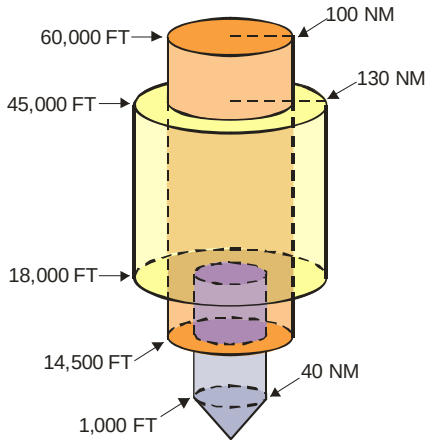


Figure 2-2. Standard Low Altitude Service Volume.

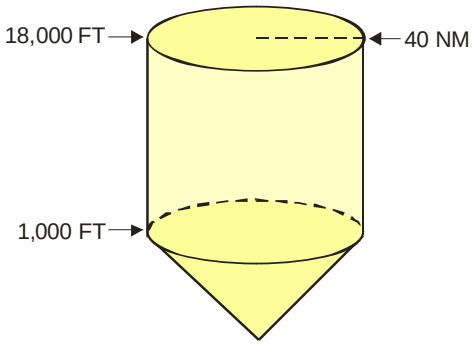
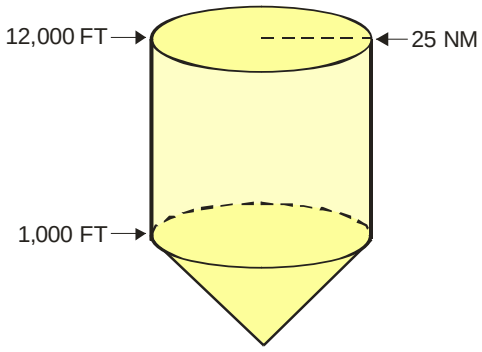


Figure 2-3. Standard Terminal Service Volume.



b. NDB.

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

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

c. 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.

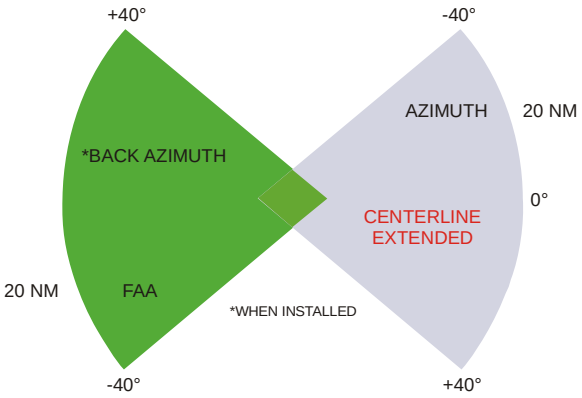
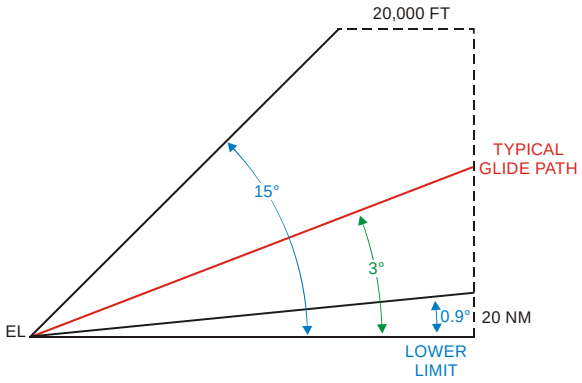


Figure 2-5. MLS Elevation Coverage.



210. REQUESTS FOR EXPANDED SERVICE VOLUMES (ESV).

a. When ATC requires use of NAVAIDs above/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.

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

c. USAF.

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

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

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

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

(5) Maintain a listing/record of USAF navigational aids and airports by geographical location. Indicate the currently assigned MV of record and the projected MV for the next Epoch Year. For the purpose of planning and implementation, maintain a current listing of those candidate navigational aids and airports with a difference of 2 degrees or more between the MV of record and the nearest future Epoch Year value.

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

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

(8) USAF navigational facilities within the NAS:

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

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

(9) USAF navigational facilities NOT within the NAS:

(a) Initiate implementation of the nearest future Epoch Year MV, as per paragraph 217a, whenever any instrument procedure is established or amended. The nearest future Epoch Year MV must become effective concurrent with publication of the amendment [see paragraphs 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, as required.

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

d. U.S. Navy.

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

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

(3) Navy flight procedure development work generally follows the same requirements as NFPO's flight procedure development work as outlined in paragraphs 216b(3) through (9). The NFPO will remain the office of primary responsibility for paragraphs 216b(1), (2), (4), and (5) functions.

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

(5) Navy navigational facilities within the NAS:

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

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

e. Airports.

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

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

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

f. NFDC. When notified by the NFPO of any change to MV of record, publish a notice of change in the NFDD. An effective date of change must be included in the NFDD.

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

h. Regional Airports Division. Coordinate with the FPO 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.

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 (see paragraph 217f(1)(b) for exception), the MV of record must be changed to the nearest future Epoch Year value. When the difference is less than 3 degrees, 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 during the assigned variation.

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

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

(1) Ground Based and Radar Facilities.

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

(b) Runways that have CAT II/III ILS procedures must have the charted runway bearing updated when the difference is greater than 1 degree.

(2) RNAV.

(a) Magnetic variation to be applied to any track used in an RNAV instrument procedure is the magnetic variation of the aerodrome of intended landing except where en route VOR or NDB navigation aids are used as procedure fixes. RNAV track information is based on the true track from one fix to a succeeding fix. To determine the magnetic track, apply the published magnetic variation of the aerodrome to the procedure true track. Preferred RNP RNAV leg types (see RTCA DO-201A) are defined so that magnetic variation is not a factor in establishing the ground track. Non-preferred leg types that follow a magnetic track to or from a fix are affected by magnetic variation errors.

218.-219. RESERVED.

SECTION 6. NOTICES TO AIRMEN (NOTAMs)

220. GENERAL.

NOTAM's provide timely knowledge to airmen, and other aviation interests, of information or conditions which are essential to safety of flight. NOTAM's pertaining to instrument flight procedures remain in effect until the pertinent charts and publications are amended or the condition requiring the NOTAM ends. This section deals primarily with procedures for issuing Flight Data Center (FDC) NOTAM's 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) Volume 1, 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 aeronautical 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., 8/0445). 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. 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, and provide the user with current information on an hourly basis. They are numbered to reflect the month of issuance and the sequence number of the month, (e.g., 8/018).

222. FDC NOTAM TYPES.

Changes to instrument flight procedures, which have been charted and distributed, may be processed as FDC NOTAM's and issued through NFDC. Except as noted in paragraph 224b, procedural minimums must not be lowered by NOTAM unless fully justified as a safety of flight issue. In order to identify procedural amendments that can be charted from the NOTAM information, National Flight Procedures Office (NFPO) personnel shall prefix the text with an action code as follows:

a. FI/T (Flight Information/Temporary). Use this prefix when temporary safety of flight issues require changes to SIAPs, airways, or textual ODPs. If the condition requiring the FI/T NOTAM (T-NOTAM) will be effective for more than four chart cycles (224 days), a procedure amendment (revised 8260-series form or P-NOTAM) must be submitted as soon as possible to allow publication of the change within the 224 day timeframe. When temporary conditions beyond the control of the NFPO; e.g., airport construction, NAVAID restrictions, temporary obstructions, etc., require NOTAM action, the NFPO will ensure the line of business (LOB) approving the temporary condition is advised of the procedural impact and the necessity of reconciling the condition as soon as possible so the temporary NOTAM can be canceled within the 224-day timeframe. If the condition cannot be corrected within 224 days, appropriate procedure amendments and/or airway revisions must be processed as noted above (see paragraph 813).

b. FI/P (Flight Information/Permanent). This prefix is used when the amended procedure is expected to be effective for more than 4

charting cycles (224 days). FI/P-NOTAM's (P-NOTAM's) are also used to promulgate correction information for U.S. government aeronautical charts. P-NOTAMs contain information that is complete for charting purposes; therefore, cartographic agencies may initiate immediate changes to charted information, based upon the P-NOTAM data, prior to receiving from NFDC the formal amendment to the appropriate procedure.

The following rules apply when initiating a P-NOTAM:

(1) P-NOTAMs may only be used for SIAPs and textual ODPs.

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

(3) Only one procedure shall be addressed per P-NOTAM.

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

(5) P-NOTAMs may NOT be used for Special IAPs, Airway changes, Graphic ODPs, SIDs, and STARs. Refer to paragraphs 225b, c, and d for graphic ODP, SID, and STAR NOTAM procedures.

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

223. FDC NOTAM PREPARATION, REVIEW AND TRANSMITTAL.

a. The NFPO is responsible for formulating instrument flight procedural and airway FDC and NOTAM Ds and forwarding them for transmittal.

b. 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.

c. The NFPO and NACO R&T are responsible for developing specific internal guidance for NOTAM preparation, quality control, transmittal, cancellation, and follow-up actions for FDC NOTAMs they generate. This guidance must be developed in concert with the NFDC, NACO 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 affected ARTCC facilities are provided notification of instrument flight procedures FDC NOTAMs and graphic DP NOTAM Ds at the time of submission, or if unable, during the next normal workday [see Order 8260.3, Volume 1, paragraph 150]. The NFPO/FPO 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 ALL FDC NOTAMs are reviewed for accuracy, completeness, content, etc. prior to submission.

(3) Procedures to ensure the NFDC is provided an information copy of all FDC 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 flight procedure and chart correction FDC NOTAM numbering.

(5) Procedures to ensure all Flight Inspection Operations Group (FIOG) initiated instrument flight procedure NOTAMs are coordinated with the appropriate NFPO Branch or the NFPO 24/7 NOTAM Center.

d. 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.

e. 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/NACO as appropriate. The USNOF must ensure that NFDC and the FDC NOTAM originating office are appraised of all changes in instrument flight procedure related FDC NOTAM numbers; e.g., when a NOTAM is canceled and reissued due to typographical error, etc. NACO R&T must be notified if changes are made to P-NOTAMs correcting U. S. Government charts. FDC NOTAMs affecting FAA developed military SIAPs at civil locations must be issued separately and forwarded to the USNOF military representative.

224. INSTRUMENT APPROACH and TEXTUAL OBSTACLE 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. Abbreviated 8260-series forms and/or P-NOTAMs have proven to be an effective means of updating aeronautical charts and amending instrument flight procedures within the following guidelines:

a. Whenever the need for a NOTAM to a procedure arises, the NFPO must review the procedure and ascertain that there are no other safety of flight changes required. Do NOT prepare a NOTAM solely to address minor non-safety related discrepancies to a SIAP; however, if a P-NOTAM is required for safety reasons, other items may be included in the P-NOTAM to simultaneously update procedure charts.

b. Procedural minimums must not be lowered *by* NOTAM except as allowed by Order 8260.3, Volume 1, paragraph 150e or when returning minimums to their previous level at the end of a temporary condition.

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

Example:

The currently published SIAP is AMDT 3 and AMDT 3A has been forwarded but not yet published. Another 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 <u>ALL</u> 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. Also, see paragraph 462 for ILS Cat II/III NOTAM restrictions.

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, TACAN, 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 is 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 8/0001 ZFW OK FI/T AIRWAY ZFW ZKC. V140 SAYRE (SYO) VORTAC, OK TO TULSA (TUL) VORTAC, OK MEA 4,300.

FDC 8/0002 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 222a, 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 FPO or 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 NOTAM text. Do not preface this information with "**CHART**:"

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

FDC NOTAM Examples:

FDC 8/_____ ORD FI/T CHICAGO O'HARE INTL, CHICAGO, IL.
VOR RWY 22R AMDT 8B...
MDA 1400/HATh 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 180 DAYS. OE 08-AGL-0689

FDC 8/_____GPT FI/P 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.
THIS IS VOR RWY 31 AMDT 18A.
TEMPORARY CRANE 410 MSL 4,375 ft SE OF RWY 31.

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

FDC 8/_____ LAN FI/P CAPITAL CITY, LANSING, MI.
ILS RWY 10R AMDT 8A...
CIRCLING MDA 1420/HAA 559 ALL CATS.
THIS IS ILS RWY 10R AMDT 8B.

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

"FDC 8/_____ 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 8/_____ AXH FI/P HOUSTON-SOUTHWEST, HOUSTON, TX.
NDB RWY 28 AMDT 4...
CHANGE ALL REFERENCE TO RWY 10-28 TO RWY 9-27.
THIS IS NDB RWY 27 AMDT 4A.

REASON: RUNWAYS RENUMBERED FOR MAGNETIC VARIATION CHANGE.

FDC 8/_____FI/P CORRECT U.S. GOVERNMENT CHART NORTH ATLANTIC ROUTE CHART, EFFECTIVE 31 JULY 08…
CORRECT ROUTE IDENTIFIER A763 BETWEEN GRAND TURK ISLAND (GTK) VORTAC AND AGUADILLA (BQN) VORTAC TO R763.

FDC 8/_____ FI/P CORRECT U.S. GOVERNMENT IFR EN ROUTE LOW ALTITUDE CHART L-3, PANEL C, EFFECTIVE 05 JUNE 08... 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 8/_____ 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 determine if other changes to criteria and policy impact the current procedure. These changes include, but are not limited to such items as procedure naming, requirements to add/remove/modify chart notes, etc. Consideration must also be given to the impact of OEs, F&E, and AIP projects pertinent to the procedure review process. Reviews will be completed within the timeframes specified in paragraph 241. Document all required changes in the NFPO Procedure Tracking System (PTS), including criteria/policy and how they impact the current procedure during the review.

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. Document periodic reviews to show when the review was conducted.

Note: The method (e.g., Spreadsheet, memorandum, etc.) used to document the periodic review is left up to the procedure development authority.

d. 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 FPO, 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.

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." Additionally, do not name Lead Radials, Bearings, or DMEs. Except as noted below, each name must consist of a 5-letter pronounceable word. Obtain 5-letter names from NFDC. Name fixes collocated with a facility (named in accordance with Order 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).

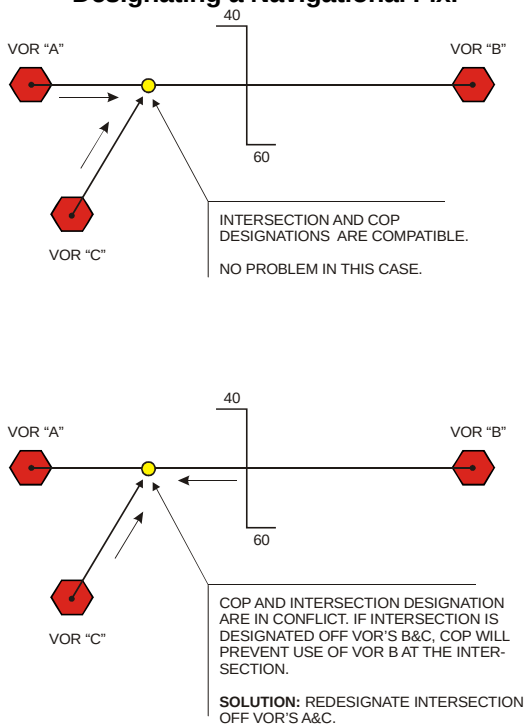
The designation of navigational fixes should be directly related to COPs. Care should be taken to avoid designating navigational fixes that require the use of a facility beyond the COP. Figure 2-6 is an example of the proper and the improper method of designating a navigational fix in relation to COPs.

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 841f(3)(k)].

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.

This paragraph identifies the MINIMUM requirement for accuracy of obstacle data used in the development of MVAs/MIAs and instrument procedures; providing the minimum accuracy standards for each.

a. Concept. Obstacle data accuracy is not absolute, and the accuracy depends on the data source. The magnitude of the error does not preclude the use of these data, provided it is identified and accounted for. In some cases, upgrading obstacle accuracy can provide relief from operational restrictions in an instrument procedure. This will allow expenditure of funds for obstacle surveys in areas where benefit to the aviation community would result. In no case; however, will the application of obstacle data accuracy preempt the requirement for the flight check of an instrument procedure for discrepancies. For sources of obstacle data accuracy, see appendix 3.

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 using raw obstacle data only (i.e., accuracy adjustments not applied). Then add horizontal/vertical accuracy code adjustments to the raw values to

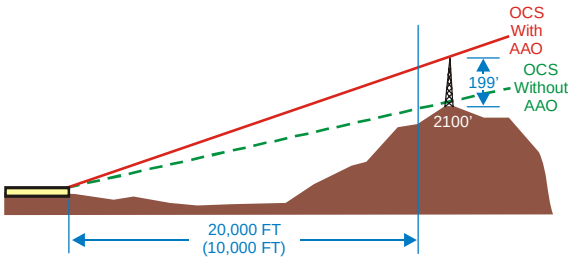
determine the obstacle's most adverse location and elevation. Accuracy code adjustment is not applied to obstacles evaluated relative to Order 8260.3, Volume 1, paragraph 289.

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.



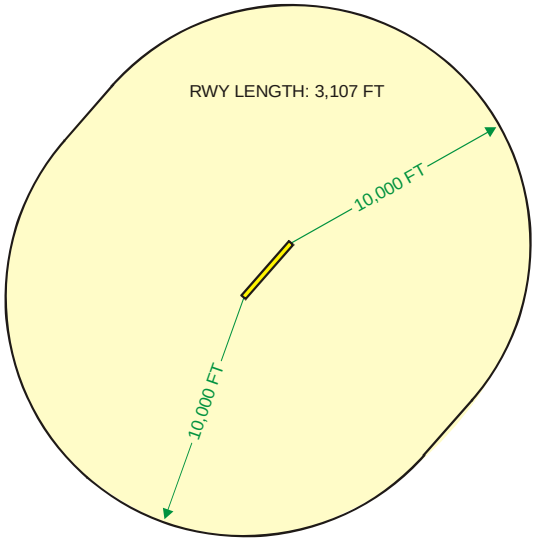
a. For each airport/helipad, establish the AAO exempted area within which a 200 ft AAO **is not** to be considered.

(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:

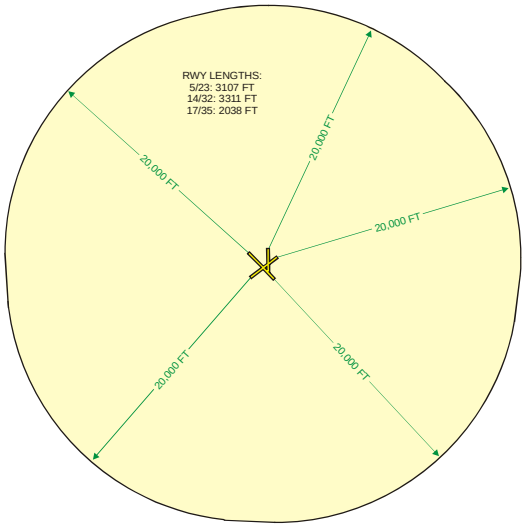
(a) No runway longer than 3,200 ft: 10,000 ft radius from **all** runway ends.

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



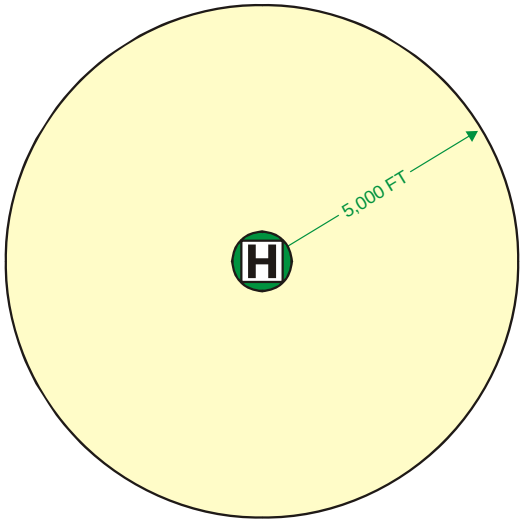
(b) One runway longer than 3,200 ft: 20,000 ft radius from **all** runway ends [see figure 2-7C].

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.



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

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

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

Note: As applied 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]:

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

Exception for runways supported by Advisory Circular 150/5300-18**:** 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 2-7E. Obstacle Identification.

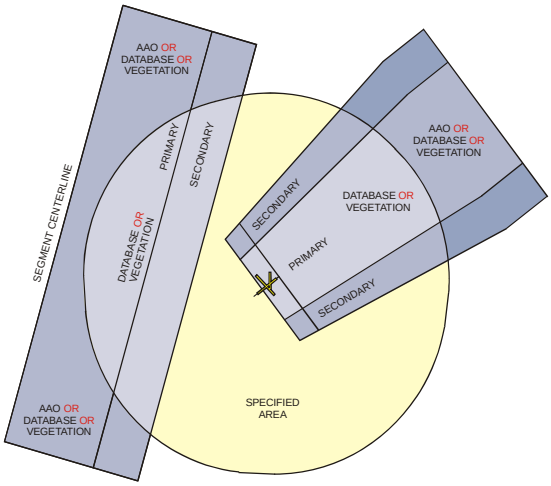
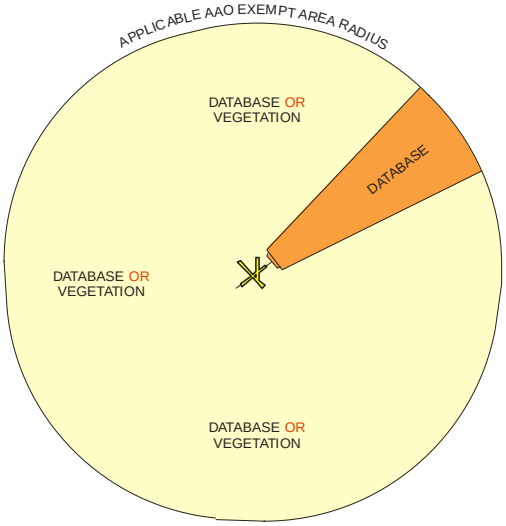


Figure 2-7F. AC 150/5300-18 Survey Area.



(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 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 (see Order 8260.54, paragraph 1.7.14). The LTP HAE will be reported on Form 8260-3/7, for procedures developed in the CONUS. See paragraph 857l(5).

276.-279. 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 Order 8260.3B, Volume 1, chapter 10. NFPO personnel may be requested to participate in original chart development at the option of the ATC facility.

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 Order 8260.3B, Volume 1, chapter 10.

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 200 ft adverse assumption obstacle (AAO) requirements have been applied. See Order 8260.3 and applicable ATO directives for proper application. 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; however, the 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 where lower altitudes are required in designated mountainous areas (DMAs) only to achieve compatibility with terminal routes, or to permit vectoring to an instrument approach procedure, and precipitous terrain is not a factor. 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 Order 8260.3B, Volume 1, chapter 10.

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 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 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).

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, *Establishing and Scheduling Civil Public-Use Standard Instrument Procedure Effective Dates.* 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. RESERVED.

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. RESERVED.

n. RESERVED.

o. RESERVED.

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

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 3.1.2, 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 3.1.2a, 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.

t. Volume 1, paragraph 3.1.2a(3), Runway Marking and Lighting. If runway markings are removed or obliterated subsequent to the commissioning of the RVR, the RVR minimums may require adjustment. However, before an adjustment is made to the minimums, 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.

u. Volume 1, paragraph 3.1.3a, Standard Lighting Systems. 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 apply approach light credit associated with a full approach light system (FALS) facility class. Unattended approach light systems that have a radio control device for a pilot to exercise control over the system, qualify for the same minimums as light systems that are controlled from a ground position.

v. Volume 1, paragraph 3.4, Establishing Alternate Minimums (Other than Standard). 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)].

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

x. 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.

y. 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).

z. 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*.

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

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

cc. 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, paragraph 3.3.3c, except;

(1) One-half mile visibility reduction is authorized when a full approach light system (FALS) is installed to the sidestep runway. The minimum visibility after applying this reduction must not be less than 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. For procedures authorized straight-in minima, re-compute visibility based on the revised "MAP-to-threshold" distance and the NALS facility class.

c. Suspend vertically guided approach operations by NOTAM. This includes area navigation (RNAV) procedures that contain 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, Volume 3, table 2-3. Consideration must also be given to what may be located in the closed portion of the runway and the TERPS obstacle identification surface (OIS) must be evaluated to ensure proper obstacle clearance.

(2) Special instrument procedures must also be afforded the same assessment as standard instrument procedures. The results must be provided to the Regional 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 HATh/HAT/HAA for visibility impact and NOTAM changes accordingly.

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

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) The Safety Risk Management (SRM) process must be applied to special procedures under the same Safety Management System (SMS) Doctrine applied to instrument procedure waivers. See paragraph 283.

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

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

(g) 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) The Safety Risk Management (SRM) process must be applied to special procedures with waivers under the same Safety Management System (SMS) Doctrine applied to instrument procedure waivers. See paragraph 283.

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

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

(f) Review the waiver request for adequate documentation.

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

(h) 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.

(i) 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.

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

(k) Enter "**Proponent's approval for use of this procedure 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.

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

(m) 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 Center (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 1050.1E, *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 requirements.

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 PROCEDURES.

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 not 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 PROCEDURES.

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 paragraph 441a(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-460 for filing. A copy will be forwarded to the applicable RFSD-AWOPM.

445. RELEASE OF SPECIAL INSTRUMENT PROCEDURE INFORMATION.

a. All FAA employees handling Special instrument procedures files must apply the provisions of the Freedom of Information Act (FOIA), 5 U.S.C. 552, when responding to a request for Special instrument procedure documentation.

b. Organizations or individuals who feel proprietary issues are at stake will have the opportunity to object during the FOIA process. Any objection should be forwarded to the Regional Flight Standards Division FOIA Coordinator for resolution.

446. 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)

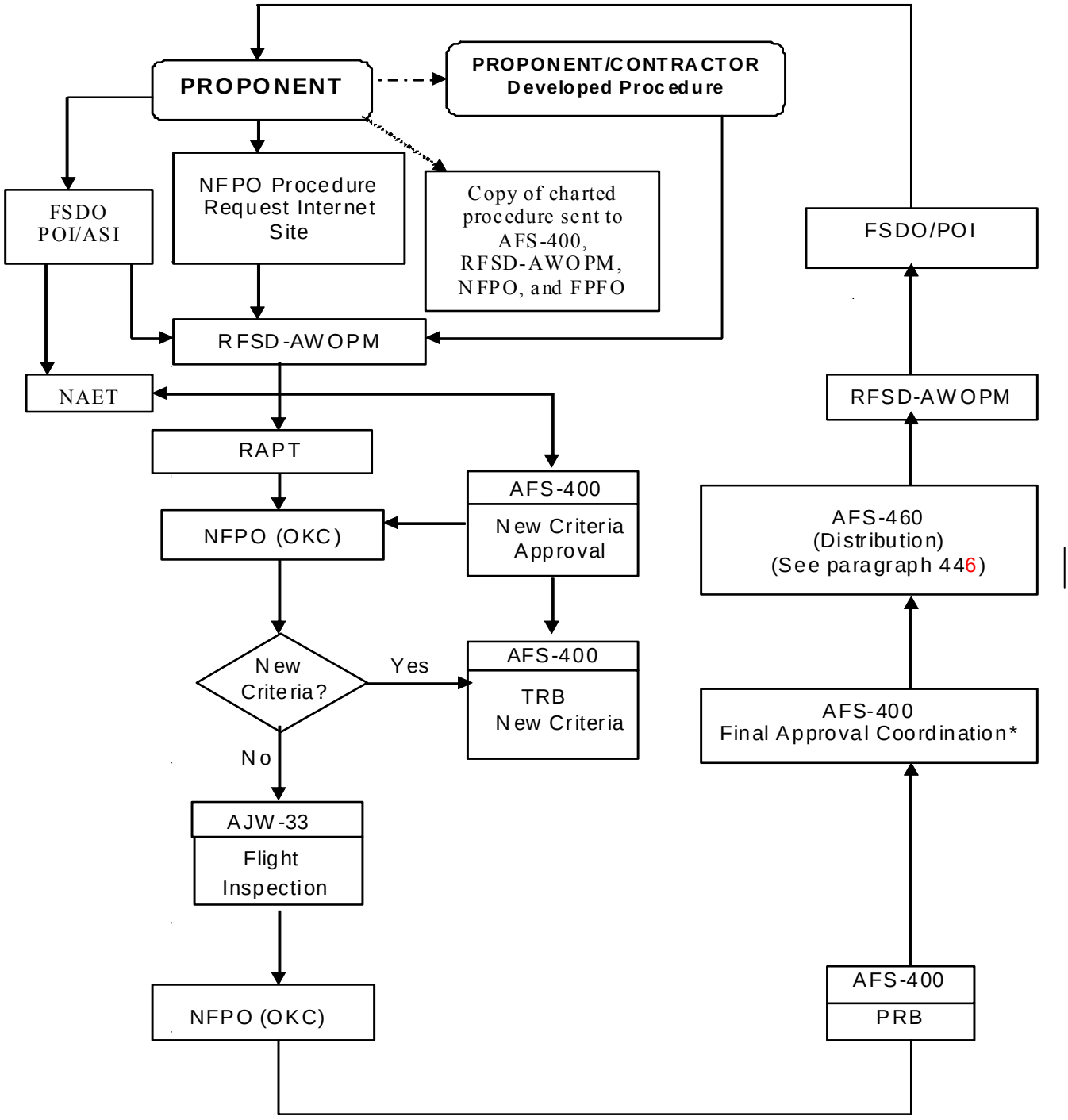
RFSD-AWOPM or FSDO/CMO
Copy to: Proponent(s) and other approved operators

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

Proponent
Copy to: Jeppesen, Inc.
Other Cartographic Companies

447.-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 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 (TCHs). Nothing in this policy requires an RNAV procedure to emulate a procedure turn used on an underlying ILS procedure. Due to the many variables involved in procedure design, especially relating to the very different aspects of ILS and RNAV design, it is impractical to set standards for all possible ILS/RNAV designs; therefore, in lieu of hard and fast design standards, use the following design guidelines:

(1) When designing an RNAV procedure at an ILS equipped runway, the RNAV procedure should emulate the ILS procedure to the maximum extent possible. In other words, if the ILS needs updating (i.e., PFAF placement to meet new/current standards), publish updated ILS and RNAV procedures concurrently. In emulating an ILS, do not include either a basic “T” or TAA in the RNAV IAP unless specifically requested by Air Traffic.

(2) If the ILS PFAF occurs at the LOC FAF, emulation of the ILS by the RNAV procedure may be a simple matter. In this case, the RNAV PFAF can be placed at the LOC FAF location and thus coincidence will have been achieved for the ILS PFAF, LOC FAF and RNAV PFAF. Use the LOC FAF name for the RNAV PFAF name. Revising the ILS procedure will, in all likelihood, not be necessary.

(3) For a variety of reasons, the situation described in paragraph 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).

e. ILS/MLS procedures may be combined with RNAV (GPS) procedures provided the additional requirements established in paragraph 802c are met. This will permit use of an ILS with the same ground track as the RNAV (GPS) procedure. There is also the option to have another ILS using strictly conventional means or a combination of both conventional and RNAV. When combining procedures, consideration must be given to the number of lines of minima that are possible and the potential human factors implications.

(1) Procedure naming will be in accordance with Order 8260.3, Volume 1, paragraph 161 and Order 8260.54, chapter 2. Some examples are:

ILS Z or RNAV (GPS) RWY 36
ILS Y or LOC/DME RWY 36

(2) No more than 5 lines of minima can be published. For example, the following are several of possible options:

S-ILS 36	S-ILS 36	S-ILS 36
LPV DA	LNAV/VNAV DA	LNAV MDA
LNAV/VNAV DA	LNAV MDA	CIRCLING
LNAV MDA	CIRCLING	
CIRCLING		

(3) ILS procedures that require RNAV for all other segments of the procedure (i.e., no RNAV procedure/minima accompanying the ILS procedure) will require an "equipment requirement" note in the planview that states: "GPS Required." In the "NOTES" section of the Form 8260-3/-7, indicate: **"Chart Planview Note: GPS REQUIRED."**

(4) ILS procedures that contain both conventional and RNAV Initial segments must have a note in the Planview, adjacent to the applicable "IAF" symbol that states: "GPS Required." In the "NOTES" section of the Form 8260-3/-7, indicate: **"Chart planview note adjacent to (name) IAF: GPS Required."**

(**5) ILS procedures that incorporate RNAV segments** as described in either situations described in paragraphs 3 or 4 above, must be documented in the same manner as an RNAV (GPS) instrument procedure. All (including portions using conventional navigation means) waypoint description codes and leg types must be documented on the applicable 8260-series forms; however, the same exceptions apply if a complete ARINC packet record is provided on the Form 8260-10. See paragraph 492b.

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

(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 wing (semi) span value for narrow and wide body aircraft to be used when calculating the Vertical Error Budget (VEB). When the narrow body value is used, a note must be placed on the approach chart to alert the pilot of this limitation. Use "**Chart note: Procedure NA for aircraft with wingspan greater than 136 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 11.

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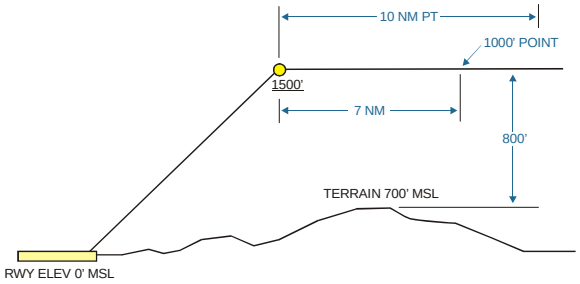
(3) Nonprecision Approach Procedures with Procedure Turn (PT):

(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 on the PT inbound leg, 7 NM from the facility for a 10-mile PT, or 5 NM from the facility for a 5-mile PT.

(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 outside the FAF on the PT inbound leg for a 10-mile PT, and 5 NM on the PT inbound leg for a 5-mile PT [see figure 5-5].

Figure 5-5.



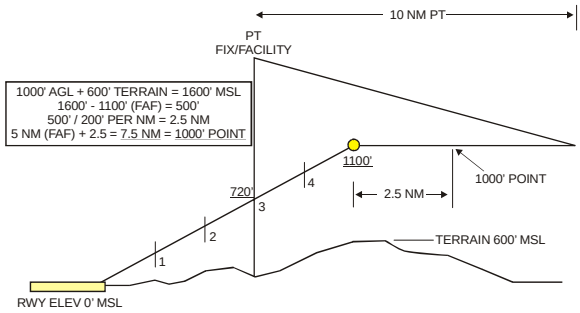
2 When the SIAP specifies a minimum altitude at the FAF less than 1,000 ft above the highest terrain in the final segment, BUT greater than 1,000 ft above the highest terrain in the intermediate segment, establish the 1,000-ft point at the FAF.

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:

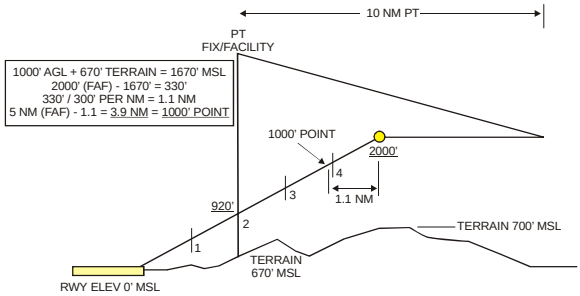
1 Where the SIAP specifies a minimum altitude at the FAF less than 1,000 ft above the highest terrain in the intermediate segment, the 1,000-ft point is assumed to be outside the FAF on the PT inbound leg at a distance determined by application of a 200 ft/NM descent to the FAF [see figure 5-6].

Figure 5-6.



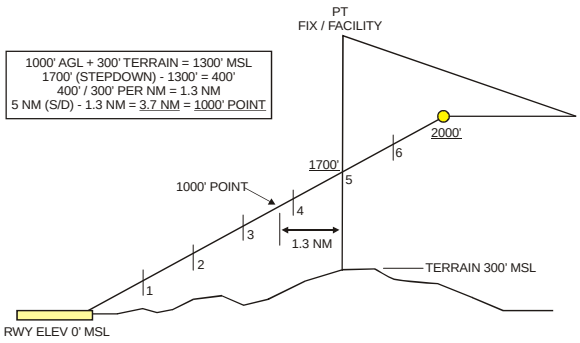
2 Where the SIAP specifies a minimum altitude at the final stepdown fix less than 1,000 ft above the highest terrain in the final segment, while specifying a minimum altitude at the FAF greater than 1,000 ft above the highest terrain in the intermediate segment, the 1,000-ft point is assumed to be inbound 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.

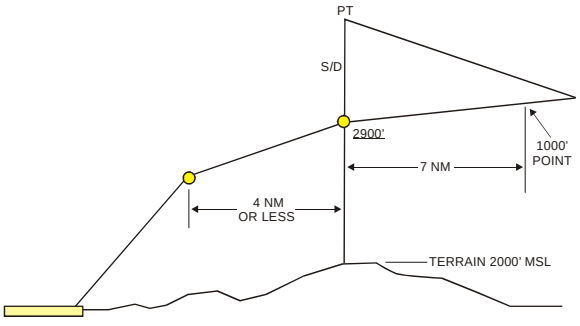


(d) Procedure Turn Over Stepdown PRIOR to the FAF:

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

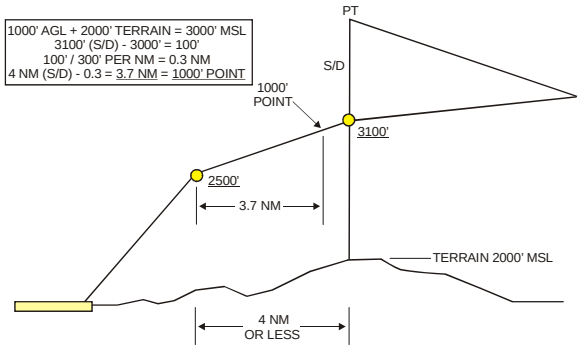
1 If the PT **completion altitude** is equal to or greater than, BUT the minimum **altitude at the stepdown fix/facility** is less than 1,000 ft above the highest terrain in the segment underlying the course reversal, the 1,000-ft point is assumed to be 7 miles from the stepdown fix/facility on the PT 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. (Intermediate 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 PT inbound leg [see figure 5-11].

Figure 5-18.

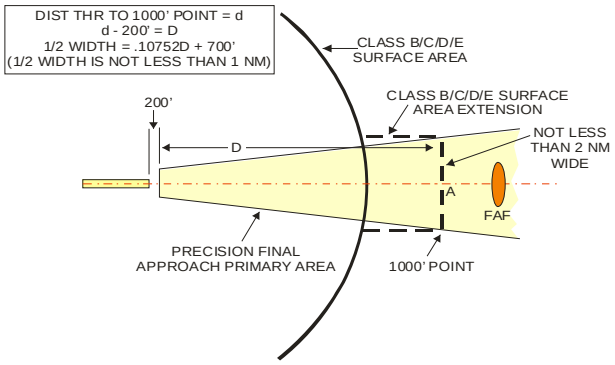
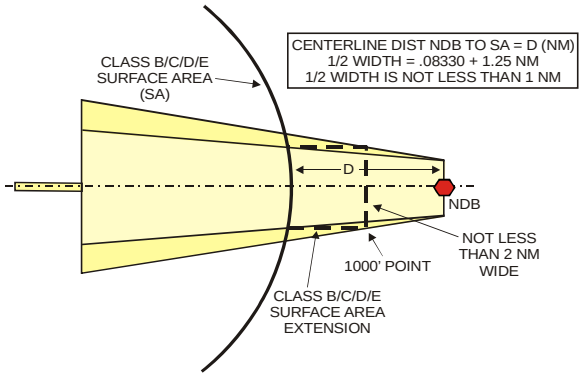


Figure 5-19.



(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.

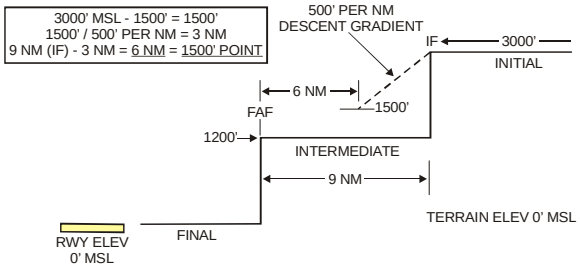
(2) Nonprecision: The width of the Class B/C/D/E Surface Area extension for other than ILS/MLS is established by measuring the width of the final approach primary area at the widest point between the surface area boundary and the 1,000-ft point. For final segments that expand toward the basic surface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

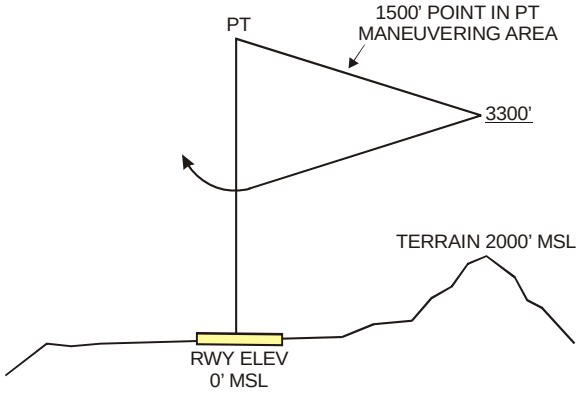
Figure 5-20.



(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 PT 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].

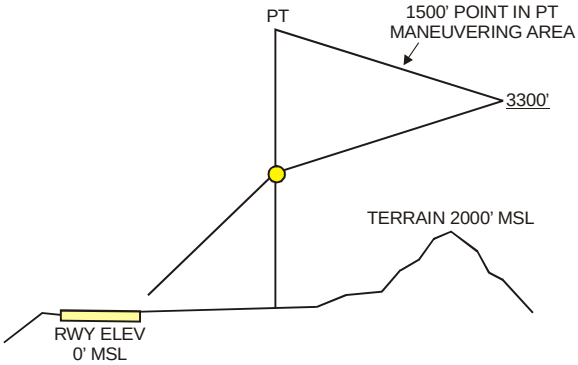
Figure 5-21.



(b) PT Over the FAF.

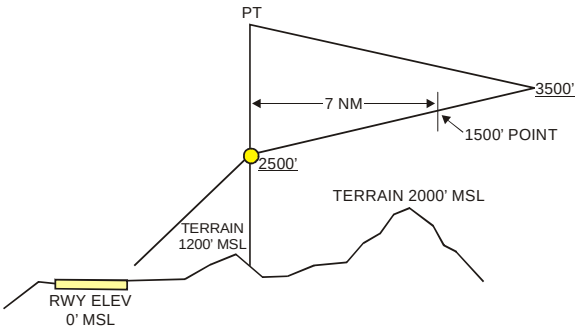
1 If the **PT completion altitude** is less than 1,500 ft above the highest terrain in the intermediate segment, the 1,500-ft point is in the PT maneuvering area [see paragraph 507k(7) and figure 5-22].

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.

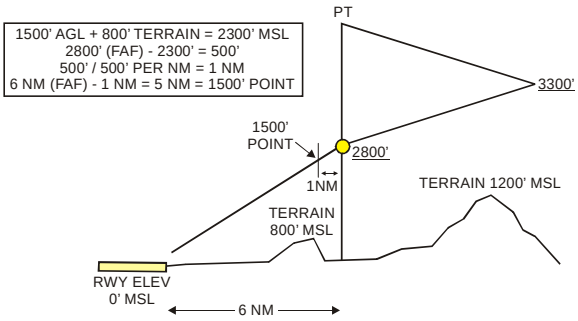
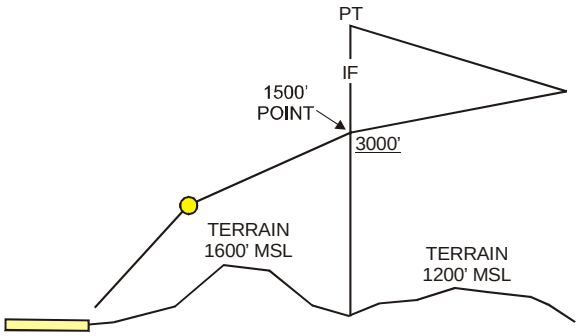
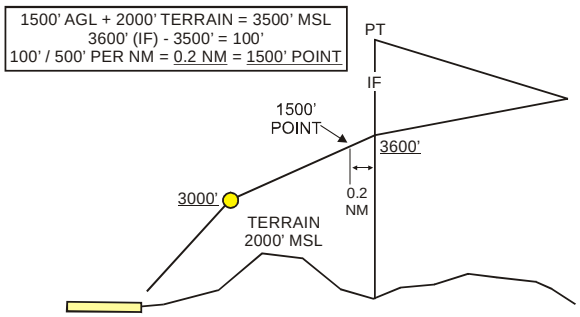


Figure 5-34.



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.

(3) Hold-in-Lieu of Procedure Turn (PT):

(a) At the FAF:

1 If the minimum **altitude at the FAF** is 1,500 ft above the highest terrain in the final segment, the 1,500-ft point is at the FAF. See figure 5-36.

2 If the minimum altitude at the FAF is greater than 1500 ft above the highest terrain in the final segment, apply the methodology in paragraph 507c(2)(a) using a 500 ft per NM descent gradient.

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 1,500 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.

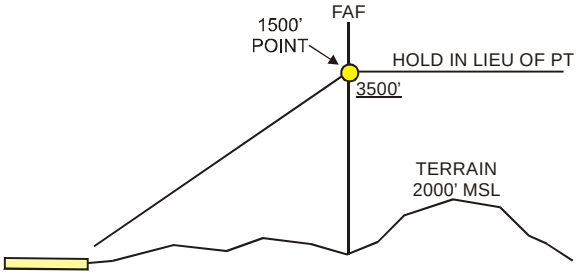
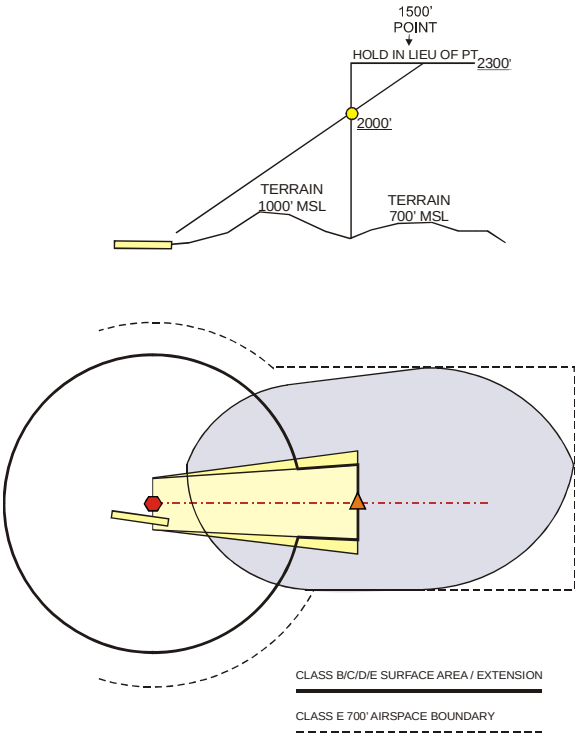


Figure 5-37.



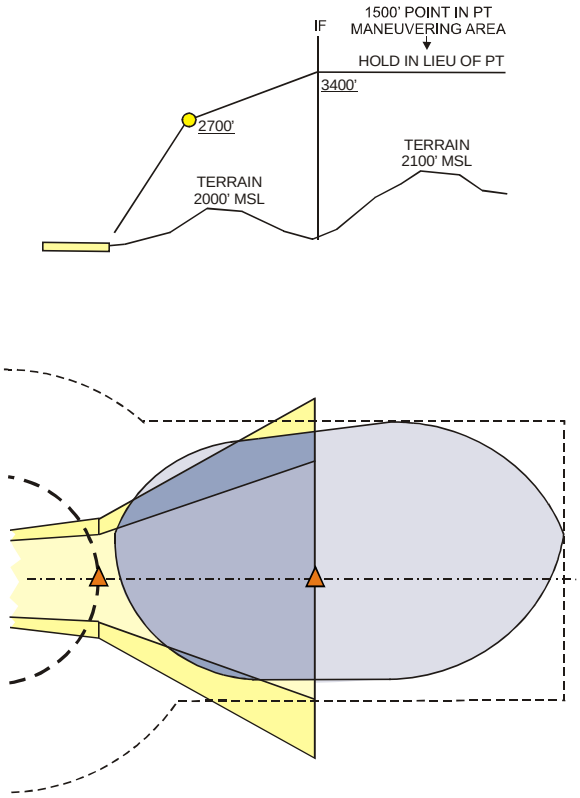
(b) At the IF.

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.

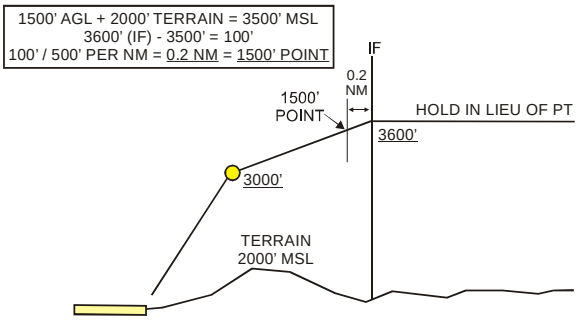
2 If the minimum **altitude at the IF** is less than 1,500 ft above the highest terrain underlying the holding pattern, the 1,500-ft point is in the holding pattern area. The Class E 700-ft airspace extension must encompass the entire holding pattern primary area. Use the pattern size appropriate to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

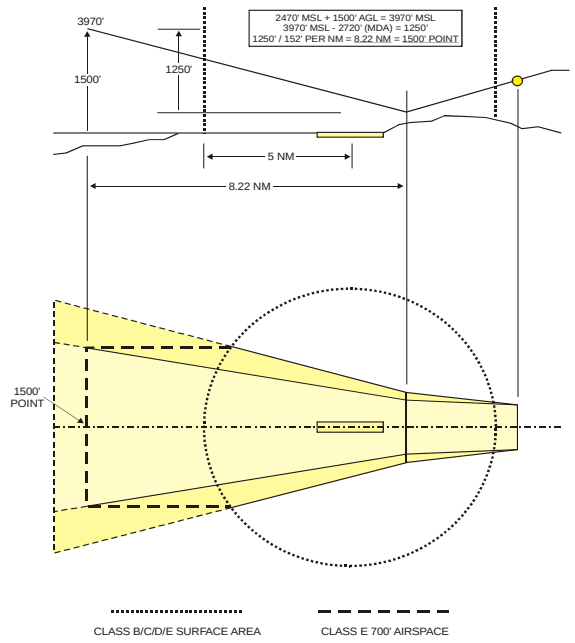


f. Missed Approach. Normally, it can be expected that the airspace required to encompass the IAPs or DPs at an airport will be sufficient to encompass that airspace required for missed approach procedures. This particularly applies to any need for Class B/C/D/E Surface Area extensions. Determine required 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(10)].

(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 altitude is greater than 1,500 ft above the highest terrain inside the 10-mile point, apply the methodology in paragraph 507c(2)(a) using a 500 ft/NM descent gradient from the 10-mile point.

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).

(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**

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 841f(3) 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 3, paragraph 2.3.1, 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.

(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 805g(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.

(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 altimeter source is obtained from a remote (different airport location) AWOS/ASOS, chart the location: **"Chart Flippin AWOS-3."**

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 404p.

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 an intermediate fix has been established, it will be defined on the procedure in the planview and profile view.

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**

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 4]. 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 841f. When an RNAV waypoint is collocated with another type of fix, use the same name for both. When documenting holding for a navigation facility, use the facility name and facility type.

Example:

OKIE
DENVER VORTAC
JACKSON VOR
RHONE OM
AVON NDB
ARUBA LOM
BONLI FM

b. State. Enter the two-letter identifier of the state in which the fix or navigation facility is located. The state is left blank if the country is other than the 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
LOC/DME
OM

(e) Class. Enter the Standard Service Volume (SSV) class. VOR, VORTAC, VOR/DME, TACAN, (T, L, H), NDB (HH, H, MH), other facilities leave CLASS blank.

(f) Magnetic Bearing. Enter the magnetic bearing from the navigation facility to the fix. Enter values to the nearest hundredth of a degree.

(g) True Bearing. Enter the true bearing from the navigation facility to the fix. Enter values to the nearest hundredth of a degree.

(h) DME. If the navigation facility provides DME for the fix, enter the DME value. Enter values to the nearest hundredth of a nautical mile (NM).

(i) Distance from Facility.

1 NM. Enter the distance in NM from the navigation facility to the fix. Enter values to the nearest hundredth of a NM.

2 Feet. When the fix being defined is a Final Approach Fix (FAF) or Precise Final Approach Fix (PFAF), enter the distance in feet from the navigation facility to the fix. Enter values to the nearest whole foot.

(j) MRA. See also paragraph 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. Specific holding patterns at ground based navigation facilities that support only RNAV use must be documented [see paragraph 217f(2)(a)].

(a) Pattern Number. Enter the number for a specific holding pattern beginning with number "1." Continue the number sequence for all specific holding patterns associated with the fix or navigation facility.

(b) Direction. Enter the holding direction based on magnetic inbound course [see figure 8-3].

(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.

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 para-graph 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. Approval. Enter the date, office, name, and signature of the NFPO branch manager or his/her delegated representative, approving the fix. The DoD may sign and approve fixes that are for DoD operations and have no impact on FAA developed instrument procedures and/or airways.

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-400.

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 1.00)**. Use a leading zero for RNP values less than 1.00; e.g., **(RNP 0.50)** [see paragraph 499i].

(c) The landing threshold point (LTP), OR for offset procedures, the fictitious threshold point (FTP) in the "TO" column; e.g., RW18R for the LTP or a CNF for the FTP. Normally, the LTP/FTP will be designated as a Fly-Over waypoint; e.g., **RW36R (MAP) (TF) (FO) or (GZWTY) (MAP) (TF) (FO)**. However, when RNP is required for the missed approach course **and** the RNP necessary is less than 1.0 [see Order 8260.52, 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 13. 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].

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:

Collocated facility:

Teardrop R-160 outbound, R-355 inbound, 4,300 ft within 15 mi. of ABC VORTAC (IAF).

Non-collocated facility:

Teardrop R-160 (ABC VORTAC) (IAF) outbound to NIXON/19.00 DME, 355.00 (I-XYZ) inbound, 3,000 ft to KENNY OM/INT.

Non-collocated facility, Altitude at Turn Point or High Altitude Teardrop:

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.

Non-collocated NAVAID – IAF after NAVAID – Altitude at Turn Point or High Altitude Teardrop - IAF after NAVAID:

Teardrop R-220 (ABC VORTAC) START/7.00 DME (IAF) outbound to NIXON/19.00 DME, 5,000 ft, 257.28 (I-XYZ) inbound, 4,500 ft to KENNY OM/INT.

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)**:**

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.

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)**:**

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 8-3. 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, 1,600 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 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.

Note 3: There may be a need to use the "LNAV Only" stipulation on RNAV (GPS) charts without vertical guidance that contain LP minima when the stepdown fix restriction applies only to the LNAV line of minima.

(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 final segment stepdown fix, when a secondary remote altimeter setting is available and an MDA adjustment is necessary, the stepdown fix must also be annotated to reflect the necessary altitude adjustment as follows:

MIN ALT: PAULA 1420*
***1540 when using (location) altimeter setting.**

e. Line 5. (Form 8260-3). Enter distance in miles and hundredths to the LTP/FTP from the outer marker (OM) and middle marker (MM).

(1) On vertically guided procedures (i.e., RNAV, ILS, GLS, or MLS) that do not contain nonprecision minima (i.e., LNAV, LOC, Azimuth Only, or Circling), place the PFAF to threshold distance in the block marked "OM."

(2) On Category II and III procedures, enter distance in feet to the

threshold from the inner marker (IM) and 100-ft HAT/HATh points (as applicable).

(3) 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 3, table 2-3, enter the TCH values at the displaced threshold and runway end as shown in the following example:

TCH 32.4 at displaced THLD; 67 at runway end.

*Note: Flight inspection, as well as instrument databases, must be based upon the same GP orientation elevation. Use 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.

(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: **"See FAA Form 8260-10."**

*Note: Alternate minimums **are** authorized on **RNAV (GPS) and RNAV (RNP) SIAPs**.*

(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(5)]

(5) When alternate minimums are non-standard; e.g., higher than standard for **each** category available for certain users, etc., do NOT place an X in the NA box. Enter # next to the "NA" box and annotate the appropriate condition by separate standard Note:

 # NA except standard for operators with approved weather reporting service.

 # CAT A, B 900-2, CAT C 900-2 1/2, CAT D 1000-3

(6) Make separate entries for the complete ILS/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.

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) See Order 8400.13, *Procedures for Category I Approach Operations at 1800 RVR and Approval of Special Authorization for Category II Approach Operations on Type I ILS,* to determine what annotations will be required on 8260-series forms to permit these lower minima.

(2) See paragraph 404 of this order for guidance on using RVR on adjacent runways.

(3) When Order 8260.3, Volume 1, paragraph 3.3.2d, 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."**

Note: Do not apply this note to RNP "Special Aircraft and Aircrew Authorization Required" approach procedures.

j. HATh/HAT/HAA.

(1) HATh/HAT. Enter height above threshold elevation (continue to use height above touchdown zone elevation when not applying Order 8260.3B, Change 20) 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 foreign terminal instrument procedures and the threshold elevation is not available, use airport elevation.

Note: Helicopter procedures to elevated heliports (e.g., heliport on the roof of a hospital) and Point-in-Space (proceed VFR) procedures pose unique circumstances when calculating weather minimums. Consideration must be given to the elevation of the source providing the ceiling information. For example, if the weather source providing the ceiling information is considerably lower than the heliport on top of the building, a much higher ceiling value must be established when the HAL value is provided.

(2) HAA. Enter height above airport elevation for circling minimums.

k. ILS Category II/III. 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 to 199-ft range with the applicable RVR established by TERPS criteria. At locations where ILS Category II procedures have been established, a separate Copter ILS

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 3.3.2d, 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.

(f) Where a heliport approach lighting system (HALS) is installed and credit for lights has been taken, annotate the procedure to indicate the minimum no-light visibility applicable if the HALS become inoperative; e.g., **"Chart note: For inoperative HALS, increase visibility to 1 mile."**

(4) Weather Reporting / Altimeter Setting.

(a) In accordance with 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) When a MDA adjustment is published by note, the adjustment value is the difference between the MDA values based on primary and secondary sources. For example, if the MDA for primary altimeter is 660 and the MDA for secondary altimeter is 720, specify to increase all MDAs by 60 ft (720-660=60).

Note: Descent angle/gradient is calculated using values based on primary altimeter only.

(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 SW of RWY 12."**

(d) When Circling minimums are restricted by aircraft category and runway combinations, use: **"Chart note: Circling NA for CATs C and D NW of RWY 6-24."**

(e) When Circling to a specific runway is restricted, use: **"Chart note: Circling NA to RWYs 18 and 12."**

(6) ILS 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). If there is more than one variation of a runway number, use a "/" between the variations and list them in the order of "L/C/R" as applicable, i.e., **"…with Rwy 27L/C."** If there is more than one runway number, use the word "and" to separate them, i.e., **"…with Rwy 27L/C and Rwy 28C/R."** 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 controlledby 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 872f.

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 in-stallled 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 require-ments 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 equip-ment 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, annotate the chart as stated in the Flight Standards approval documentation.

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 feeder (when applicable), initial, and intermediate approach segment speed restrictions: **"Chart planview note: Limit feeder, 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 REQUIREMENTS ON AAUP."**

r. Simultaneous Offset Instrument Approach (SOIA) procedures with "PRM" in the title (e.g., ILS PRM RWY 12R, LDA PRM RWY 22L, 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.

(4) The visual segment is based on the premise that the pilot will maintain level flight at the MDA until the helicopter is in a position to initiate a descent to the helipoint. When obstacles preclude an immediate descent at the MAP to the final approach and takeoff area (FATO) area and an ATD fix has been established to provide a descent point to the FATO, use the following: **"Chart a profile note: Maintain (MDA altitude) until (distance) NM past (MAP Fix Name)."**

(5) When a nonstandard bank angle is used in procedure development, this information must be charted to insure pilot compliance; use: **"Chart note: Bank Angle Nonstandard – Use 18 Degrees."**

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, provided Required Obstacle Clearance (ROC) is maintained. **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 2,800 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 2,500 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 3,100 then climbing left turn to 4,000 direct ABC VOR and hold”** or **“Climb to 3,100 via ABC R-180 then climbing left turn to 4,000 direct ABC VOR and hold.”**

(4) When circumstances (terrain, obstructions, special use airspace, etc.) require an immediate turn: **“Immediate climbing right turn to 4,000 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 (except for helicopter procedures) must **specify an altitude** that is at least 400 ft above the THRE/TDZE prior to commencing a turn. Round the resulting altitude to the next higher 100-ft increment: ‘‘**Climb to 1,200 then climbing left turn to 3,100 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 (400 ft/NM for helicopter operations) or specified gradient rate of climb to reach 400 ft above THRE/TDZE may be used: **“Climb via ABC R- 090 to 9 DME, then climbing left turn to 5,000 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 5,500 via ABC R-111 then climbing right turn to 6,000 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 3,000 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 7,000 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 4,000 on track 281.06 to FIKOG, right turn to WODVU, then track 011.23 to BTG VORTAC and hold" or Climb to 2,500 direct CRAZY then climbing right turn to 5,000 direct INSAN and direct LOONY and hold.

(10) RNAV (RNP) missed approach procedures require a note in the briefing strip that informs the pilot when the missed approach segment requires the use of RNP less than 1.0. Use: **"Chart note: Missed approach requires RNP less than 1.0."**

Note: This note is required when the final approach segment (FAS) RNP is carried into the missed approach segment, i.e., missed approach does not splay at 15 degrees from the FAS RNP area.

e. Missed Approach Climb Gradient (CG). When a missed approach climb gradient in excess of 200 ft/NM (400 ft/NM Copter Procedure) 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/NM (400 ft/NM Copter).

(2) In addition to the lower minima that requires the CG, minima will be published to support a standard 200 ft/NM CG (400 ft/NM Copter).

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 8,000 via 015 course to DIXIE and hold, continue climb-in-hold to 8,000."**

(2) When a missed approach holding altitude has been established that does not permit a return to the IAF or allow for en route flight, include in the missed approach instructions the altitude that can be climbed to in the holding pattern to reach the Enroute structure: **"Climb to 4,000 via 270 course to BONZO and hold, continue Climb-in-hold to 9,000."**

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. Alternate missed approach instructions must not be charted.** 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 3,000 THEN TURN RIGHT DIRECT XUB VOR AND HOLD, OR AS DIRECTED BY ATC.
ALTERNATE MA: 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 ensure an IFR missed approach procedure is published, either on the chart or by NOTAM in the event of lost communications. This does not preclude Air Traffic from issuing alternate climb-out instructions.

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 Form 8260-9 or in Additional Flight Data.

a. If sufficient space is not available on the form for all necessary data, it may be continued in the Notes section or on Form 8260-10. When necessary to use Form 8260-10, state: **"See FAA Form 8260-10."**

b. Items such as holding information, restricted area data, final approach course alignment, etc., must be retained when amending a procedure.

c. Enter Holding Instuctions 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 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 (3.5:1 for helicopter procedures) area.

(2) List the obstacle under Additional Flight Data as: **"Chart 374 antenna 352416N/ 0881253W."** Do not chart if the obstacle is an AAO; document as noted in subparagraph d Note. Do NOT identify it as a "paragraph 289 obstacle." Additionally, make the following entry in the Remarks section of the Form 8260-9: **"TERPS 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 (e.g., LDA, LDA with Glideslope, LNAV, VOR, etc.) approach procedures, 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 217]. 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 identified in the VFR Transition Area surface evaluation, those obstacle penetrations that exist outside the OCS-1 and OCS-2 areas, but are within the OIS area (see Order 8260.42, Chapter 5), these obstacles must be annotated on the chart; e.g., **"Chart 2674 antenna 372219N/0941657W."**

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 or missed approach segment must be coordinated through AFS-460 prior to forwarding for publication.

u. Vertical Descent Angle (VDA)/TCH.

(1) For straight-in aligned non-precision SIAPs (except for procedures that already have a GS/GP angle established for the vertically guided procedure on the same chart and surveillance (ASR) approach procedures), enter the descent angle for the final approach, and the appropriate TCH: **NIXON to RW15: 3.26/55.** Where straight-in minimums are not authorized due to an excessive descent angle, enter the straight-in descent angle (may exceed maximum when compliant with circling descent angle). If there is more than one type of **nonprecision** minima to be published (i.e., LP and LNAV), publish the VDA that will support the lowest minima as follows: **NICOL to RW36: 3.10/55 – LP ONLY.** Where the VDA values are not coincident with published VGSI values, see paragraph 855n.

Note: Only one angle and TCH will be published on the chart.

(2) For COPTER PinS procedures, except those annotated "proceed VFR…" enter the visual segment descent angle (VSDA) (to the hundredth of a degree) from the specified descent point (MAP or ATD after MAP) to a specified hover height (20-ft maximum) which is known and documented as a Heliport Crossing Height (HCH). Data entry format:

(MAP Name**) TO HELIPORT: 7.30/5 ft HCH** or **0.2 NM after (**MAP Name**) TO HELIPORT: 7.50/20 ft HCH.**

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**."

x. Ceiling requirements. When the ceiling value is restricted by TERPS Volume 3, paragraph 4.2 (POFA), enter the applicable ceiling value to be charted; e.g., **CHART CEILING: S-ILS 300.**

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/THRE/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 "THRE/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 Threshold Elevation (THRE) or Touchdown Zone Elevation (TDZE) [as stated in the AMIS/IAPA database] for the runway designated in the procedure title. Enter the sidestep runway and THRE/TDZE, if applicable, below the first entry; e.g.:

THRE: 28L 2854
THRE: 28R 2858

Leave the THRE/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) The procedure ID is changed from VOR-A to VOR-B, etc.

(c) An "L", "C", or "R" designation is added or removed from the procedure title; e.g., VOR/DME RWY 18L/R is changed to VOR/DME RWY 18L.

(d) The name, facility type, and/or identifier of NAVAIDs are changed, including those mentioned in the "Additional Flight Data" and "Missed Approach" blocks of the 8260-series form.

(e) The NAVAID providing final course guidance is relocated and the relocation changes the published final approach course.

(f) The reference NAVAID is changed to another facility on a VOR/DME RNAV procedure.

(g) Straight-in minimums are added or deleted that require change to the procedure ID; e.g., NDB RWY 28 to NDB-A or NDB-A to NDB RWY 28.

(h) 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 NAVAID providing final approach course guidance is changed.

(d) The name, facility type, and/or identifier of NAVAIDs are changed, including those mentioned in the "Additional Flight Data" and "Missed Approach" blocks of the 8260-series form.

(e) Marker beacons specified as a final approach fix (FAF), step-down fix, or missed approach point (MAP) are decommissioned,

(f) The basic runway designation is changed due to renumbering of the runways.

(g) A secondary equipment requirement is added to or deleted from the procedure and the procedure ID does not change; e.g., adding "DME Required" Note.

(h) The Procedure ID changes; e.g., from "VOR/DME" to "VOR/DME or TACAN;" "ILS" to "ILS or LOC/DME."

(i) Any published fix name, course, or altitude is changed.

(j) Any published distance is changed which:

1 Requires a change to the Time/Distance Table.

2 Is greater than 0.5 NM for distances outside the FAF, or greater than 0.1 NM for distances inside the FAF.

(k) Any minimums change.

(l) The airport elevation, threshold elevation, or touchdown zone elevation is changed and minimums are affected.

(m) Frequencies are changed in notes on the Forms 8260-3/4/5/7, or military equivalent.

(n) Lighting changes occur that affect published visibility and/or renders a procedure unusable at night.

(3) A delayed amendment, not requiring immediate amendment action, **BUT** which must be processed within 224 days (i.e., 4 56-Day charting cycles), is required when:

(a) The airport elevation, threshold elevation, and/or TDZE is changed, BUT published ceiling and/or visibility are NOT affected.

(b) Safety of flight is no factor.

(c) For conventional navigation procedures only, 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.

(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) 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.

(d) Lighting changes occur that do NOT affect published visibility.

(e) Fix coordinates are changed, which do not require a change to the procedure chart [see paragraph 858e(2)(j)] or any FAS data block items on LPV SIAPs.

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(5) Changes to the NAS infrastructure that require procedure amendments under subparagraphs (2) and (3) above must be pre-coordinated with the NFPO by the NFDC to become effective on a 56-day AIRAC charting date and must be effective concurrent with procedure amendments. This will ensure instrument procedure availability to the maximum extent possible, lessen impact on airport IFR operations, and ensure chart/database harmonization.

(a) When uncoordinated physical changes have been made; e.g., runways have been re-numbered, the NFPO will promulgate the information via NOTAM pending assignment of a coordinated effective date.

(b) The NFPO must be notified immediately of changes to airport reference points, airport field elevations, touchdown zone elevations, and runway threshold locations/elevations to assess the impact on instrument procedures. The NFPO is allowed 28 calendar days to evaluate reported changes, surveys, etc., and respond to the NFDC. If the NFPO does not respond to reported changes within 28 days, changes within the following tolerances may be promulgated via NFDD when verified.

1 The following runway threshold parameter changes are deemed to have no impact on instrument approach procedures:

+/- 50 ft or less longitudinally
+/- 10 ft or less laterally
+/- 3 ft or less vertically

2 Procedure amendments will be made no later than the next biennial review.

3 Changes that exceed the tolerances above require immediate NOTAM action to ensure safety and procedural currency. LPV procedures must be "NOTAMed" **PROCEDURE NA** whenever the threshold is moved regardless of value until amended.

(c) All NAVAID position changes must be evaluated for impact by the NFPO prior to promulgating the revised information.

(d) Changes to airport identifiers must also be coordinated with the NFPO to assess the impact on instrument procedures. Airport identifier changes affect avionics coding for RNAV procedures and in some cases require procedure amendments.

(e) Internal coordination procedures to establish mutually agreed upon effective dates for NAS data changes must be developed jointly between the NFDC and the NFPO. Every effort must be made to allow changes to be effective as soon as possible but no later than one year after receipt or as coordinated.

(6) Except as listed below, the NACO will not change charts and databases without supporting procedure amendments; i.e., P-NOTAM or 8260-series form.

(a) Decommissioned marker beacons may be deleted from chart depiction provided they are not used as a FAF, step-down fix, or MAP based on NFDD publication.

Note: If uncertain whether this action can be done without impacting the procedure, contact the National Flight Procedures Office for clarification.

(b) Lighting changes may be made to airport sketches and the AFD when published in the NFDD.

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.

1 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.

2 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 the higher glide slope; e.g.,

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); VEB – Vertical Error Budget. Enter the adjustment amount for all codes except SI and HAA. Use **XP** to refer to the remarks section for items not covered in this paragraph. For example: **AC50, SA-27, AS1500, etc.** If necessary explain the code used in Part C - REMARKS. For precision or APV approaches, where obstacles require a glide slope higher than 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 HATh/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 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. When there are multiple controlling obstacles in the missed approach segment, document this information in Block 1. 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; 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, chapter 3, "Visual Portion of Final" penetrations. Document 20:1 penetrations first, followed by 34:1 penetrations as applicable. For an obstacle that penetrates the 20:1 surface, do not repeat the documentation process for the 34:1 surface (i.e., 20:1 penetrations automatically penetrate the 34:1 surface). Include the obstacle MSL elevation, obstacle type and ID (if applicable), coordinates, and amount of penetration to the hundredth of a foot. Use standard entry:

TERPS, Volume 1, "Visual Portion of Final" penetrations:

20:1 5345 TREE (KSUN0092)
432931.65N/1141713.21W (43.57)
5342 TREE (KSUNT037)
432930.08N/1141710.91W (30.03)

34:1 5337 TREE (KSUN0081)
432927.26N/1141702.79W (27.89)

*Note: For **RNAV (RNP)** procedures, include the horizontal/vertical obstacle accuracy values. The amount of penetration includes obstacle accuracy.*

20:1 5345 TREE (KSUN0092) (20/2)
432931.65N/1141713.21W (46.07)
5342 TREE (KSUNT037) (50/20)
432930.08N/1141710.91W (51.19)

34:1 5337 TREE (KSUN0081) (20/2)
432927.26N/1141702.79W (30.51)

(2) State the effect, if any, of waivers to published minimums.

(3) For VOR/DME RNAV SIAPs, enter the MA fix XTRK error.

(4) Enter the amount of threshold displacement, if any.

(5) 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.

(6) 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.

(7) When flight inspection establishes a final FAC other than the plotted magnetic course, enter:

"Plotted FAC is 087.43 M."
"Electronic flight inspected FAC is 089 M."

(8) For RNAV (GPS and RNP) Baro-VNAV procedures, enter Critical Temperature computations if other than standard [see paragraph 497].

(9) Enter a reason when a VDP has not been established [see paragraph 431]: e.g., **"VDP NOT ESTABLISHED – Obstacles penetrate VDP surface."**

(10) 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."

(11) 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

(12) Enter indicated airspeed(s) (IAS) used to calculate RF turn radius for RNP procedures if other than standard; 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****.*

(13) Document Helicopter "Visual Portion of Final" or "Proceed VFR" penetrations. Document "Visual Portion of Final" penetrations and/or "Proceed VFR" obstacle(s) that penetrates the 5,280 ft obstacle assessment area. Include the obstacle MSL elevation, obstacle type and ID (if applicable), coordinates, and amount of penetration to the hundredth of a foot. See paragraph 274a for additives and exemptions. Use standard entries:

VISUAL PORTION OF FINAL PENETRATIONS:

5345 TREES (KSUN0092)
432931.65N/1141713.21W (43.57)

5342 TREE (KSUNT037)
432930.08N/1141710.91W (30.03)

and/or

5,280-FT "PROCEED VFR" SEGMENT LEVEL SURFACE AREA PENETRATIONS:

5345 TREES (KSUN0092)
432931.65N/1141713.21W (43.57)

5342 TREE (KSUNT037)
432930.08N/1141710.91W (30.03)

5337 TREE (KSUN0081)
432927.26N/1141702.79W (27.89)

(14) Document nonstandard tailwind component used in helicopter missed approach and departure calculations (see Order 8260.42, chapter 2); e.g., **NONSTANDARD TAILWIND COMPONENT USED – 40 KNOTS.**

(15) Document nonstandard bank angle used in helicopter calculations (see Order 8260.42, chapter 2); e.g., **NONSTANDARD BANK ANGLE USED – 18 DEGREES.**

(16) Document route width reductions used in helicopter GPS or WAAS procedures (see Order 8260.42, chapter 2); e.g., **ROUTE WIDTH REDUCTION KLING TO GENNE – 1.5 NM PRIMARY; 0.5 NM SECONDARY.**

(17) Document the height above the heliport/airport or height above surface when a turn at an altitude for the Missed Approach is less than 400 ft AGL; e.g., **MA TURN BEGINS 250 FT ABOVE HELIPORT (or SURFACE, or AIRPORT).**

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 THRE/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 Form 8260-7 will indicate the need to "See Form 8260-15 for this airport," so a Form 8260-15 must 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) For procedures developed by and quality reviewed by the FAA, the person who developed the procedure signs the original Form 8260-7 in the upper portion of the space under "Developed by." The "Recommended by" section must be signed by the NFPO/Division Manager or their designated representative. Forward the completed form to AFS-400 for final approval.

(2) For procedures developed by non-government sources, the person who developed the procedure signs the original Form 8260-7 in the upper portion of the space under "Developed by." The "Recommended by" section must be signed by the proponent or their designated representative. Additionally, see 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 the use of private facilities, e.g., landing area or navigational facility, the following statement must be added in the NOTES section of the Form 8260-7 restricting the use of that procedure: **"Chart Note: Use of [name of private facility] requires permission of the owner; use of this procedure requires specific authorization by FAA Flight Standards."**

(2) Where there are no private aspects to a special instrument procedure, the following statement must be added in the NOTES section of the Form 8260-7 restricting the use of that procedure: **"Chart Note: Use of this procedure requires specific authorization by FAA Flight Standards."**

(3) Regional development and/or documentation of foreign terminal instrument procedures (FTIP) 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 part numbers.

(2) Enter the necessary procedural data in the space provided.

(3) Enter the "Lower Blocks" identical to the information presented on page 1 of the SIAP [see paragraph 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, changes of MEA, MOCA, MAA, and all MCA flagged fixes, and MRA flagged fixes where the MRA is higher than the MEA for route of flight. All airways and routes terminate at the U.S. control area boundary (route alignment may be explained in 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. Required DME facilities will be documented in the REMARKS section. In some cases, sufficient ground-based navigation sources are inadequate/unavailable to support DME/DME/IRU operations. When this occurs, the route must be annotated "GNSS REQUIRED." Document this requirement in the 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 highestterrain). 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. The MEA block will be left blank.

(2) For high altitude RNAV "Q" routes, the MEA, like Jet routes, is considered to be FL 180 unless noted otherwise (see paragraph 880g). The MEA block will be left blank except when there is insufficient DME coverage to support the use of DME/DME/IRU "Q" route operations. An MEA may then be established to define the lowest altitude that will support DME/DME/IRU use. This will be identified in the MEA block with "D/D/I" over the MEA value.

g. GNSS MEA. A GNSS MEA is required on **all** RNAV routes and may be established (when required) for low altitude Victor or colored airways. Do not establish a GNSS MEA on a Victor or colored airway unless it is at least 500 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
DME facilities required for Q routes
Airway restrictions

(1) To assist charting agencies, when segments are amended or canceled,

describe the changes in this section or elsewhere on the form as appropriate.

(2) When airway restrictions need to be identified on the chart, prior to the restriction indicate "chart."

Example:

"Chart: ALB R-067 UNUSABLE, USE CAM R-248."

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 Rulemaking (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	18000			FGT, DLH, EAU, MCW, MSP, MNM, ASP, TVC, GEP, RWF, BRD	3/12/08
	SIOUX FALLS, SD VORTAC				D/D/I 20000					
J345	LOST WAGES, NV VOR			23000	45000					6/10/08
	UP CREEK, CO VORTAC				23000					
V413	GOPHER, MN VORTAC		TOWER 2438@ 450345N/930822W TERRAIN 1290 445700N/921900W	5500	17,500	4000		*5500	*FLIGHT CHECK RESTRICTION ON FARMINGTON(FGT) VORTAC	ON FILE
	*WAGNR, MN INT			3500	6500NE 5500SW					
T204	CHARLOTTE (FB), NC VOR/DME			2300	10000	2300			MRA increased by Flight Inspection	10/23/08
	JOTTA (FB) (TF), NC			2000						

DATE	OFFICE	TITLE	SIGNATURE
11/26/2008	AJW-XXX	MANAGER	

FAA FORM 8260 - 16 / October 2002 (computer generated)

APPENDIX 1. ACRONYMS AND ABREVIATIONS

AAO	adverse assumption obstacle
AAUP	Attention All Users Page
AC	Advisory Circular
ADF	automatic direction finder
ADP	automatic data processing
AF	Airway Facilities
AFD	Airport/Facility Directory
AFS	Flight Standards Service
AFSS	Automated Flight Service Station
AGL	above ground level
AIP	Aeronautical Information Publication
AIP	Airport Improvement Program
ALS	approach light system
AOP	NAS Operations Program
AP	Autopilot
APO	aviation policy and plans
APV	approach with vertical guidance
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	Automated 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)
DG	descent gradient
DH	decision height
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
FATO	final approach takeoff area
FB	fly-by
FCC	Federal Communications Commission
FD	Flight Director
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 controlled 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 ellipsoid
HAL	height above landing area elevation
HAS	height above surface
HAT	height above touchdown
HATh	height above threshold
HCH	Heliport Crossing Height
HF	high frequency
HMAS	height of missed approach surface
HUD	head-up display
IAC	initial approach course
IACC	Interagency Air Cartographic Committee
IAF	initial approach fix
IAP	instrument approach procedure
IAPA	Instrument Approach Procedure Automation
IFP	instrument flight procedures
IC	intermediate course
ICAO	International Civil Aviation Organization
IF	intermediate fix
IF	initial fix (RNAV)
IFP	instrument flight procedure
IFR	instrument flight rules
ILS	instrument landing system
IM	inner marker
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
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 Geospatial-Intelligence Agency
NM	nautical mile
NOAA	National Oceanic & Atmospheric Administration
NOS	National Ocean Service
NOTAM	Notices to Airmen Publication
NPRM	Notice of Proposed 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	Simplified Directional Facility
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 air 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)
THR	threshold
THRE	threshold elevation
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 range
VOR/DME	VOR collocated with DME
VORTAC	VOR collocated with tactical air navigation
VPA	vertical path angle
VSDA	visual segment descent angle
WAAS	wide area augmentation system
WCH	wheel crossing height
WP	waypoint
XTRK	crosstrack

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

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: 487 BUSH 335032N/1163102W,
CHART: 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: 2005

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

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:
PALM SPRINGS, CA	PALM SPRINGS INTERNATIONAL	RNAV	RNAV (RNP) Z RWY 13R, ORIG	AMDT: NONE
				DATE

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Figure A6-1

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 12. FINAL APPROACH SEGMENT (FAS) DATA BLOCK CYCLIC REDUNDANCY CHECK (CRC) REQUIREMENTS

Content of the FAS Data Block. Each FAS data block contains 22 elements (fields) (20 elements for 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. For helicopter Point-in-Space (PinS) operations, see RTCA Document DO-229D, Appendix Q, for unique FAS Data Block requirements.

1. Fields needed for the Final Approach Segment (FAS) Data Block record for approaches using WAAS (LPV 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	2 characters	Numeric
Runway Letter	2 characters	Numeric
Approach Performance Designator	1 character	Unsigned Integer
Route Indicator	1 character	Alpha
Reference Path Data Selector	2 characters	Unsigned Integer
Reference Path Identifier (Approach ID)	4 characters	Alphanumeric
LTP or FTP Latitude	11 characters	Alphanumeric
LTP or FTP Longitude	12 characters	Alphanumeric
LTP or FTP Ellipsoidal Height	6 characters	Signed Integer
FPAP Latitude	11 characters	Alphanumeric
FPAP Longitude	12 characters	Alphanumeric
Threshold Crossing Height (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 one or two numbers with a valid range of 1-36. Use of “0” in the runway number is obsolete.

Examples:

26, 8, 18, 2

e. Runway Letter. A runway letter (left (L), right (R), or center (C)) is used to differentiate between parallel runways. The valid range is 00 through 11. The convention for coding is as follows:

00 = no letter	10 = C (center)
01 = R (right)	11 = L (left)

f. Approach Performance Designator. A number from 0 to 7 that identifies the type of approach. An “0” is used to identify an LPV approach procedure and a “1” indicates a Category I approach procedure. Leave blank (null) for LAAS procedures. Other values are reserved for future use.

Example: 0 = LPV and LP

g. 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.

h. 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

i. 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.

j. Landing Threshold Point (LTP) or 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

k. Landing Threshold Point (LTP) or 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

l. LTP or FTP Height Above Ellipsoid (HAE). The height expressed in meters reference the WGS-84 ellipsoid (see Order 8260.54, paragraph 1.7.14). The first character is a + or – and the resolution value is in tenths of a meter with the decimal point suppressed. Use the LTP HAE for offset procedures.

Example:

+00356 (+35.6m), -00051(-5.1m), +01566 (+156.6m), -00022 (-2.2m)

m. Flight Path Alignment Point (FPAP) - Latitude. A point located on a geodesic line or an extension of a geodesic line calculated between the LTP and the designated center of the opposite runway-landing threshold. It is positioned at a distance from the LTP to support a prescribed procedure design angular splay and course width, as well as functionality associated with an aircraft. It is used in conjunction with the LTP to determine the lateral alignment of the vertical plane containing the path of the RNAV final approach segment. On shorter runways, the FPAP may be located off the departure end of the landing runway. The latitude of the runway FPAP is defined in WGS-84 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

n. 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

o. Threshold Crossing Height (TCH). The designated crossing height of the flight path angle above the LTP (or FTP). The allowable range of values is defined in Order 8260.3, Volume 3, Table 2-3.

Example:

00055.0 (55.0 ft); 00042.0 (42.0 ft)

p. TCH Units Selector. This character defines the units used to describe the TCH.

Example:

F = feet M = meters

q. Glidepath Angle. The angle of the approach path (glidepath) with respect to the horizontal plane defined according to WGS-84 at the LTP/FTP. It is specified in degrees.

Example:

02.75 (2.75°), 06.20 (6.20°), 03.00 (3.00°)

r. 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.

Example: 106.75

s. Δ Length Offset. The distance from the stop end of the runway to the FPAP. It defines the location where lateral sensitivity changes to the missed approach sensitivity. The value is in meters with the limits being 0 to 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

t. Precision Approach Path Point CRC Remainder. An 8-character hexadecimal representation of the calculated remainder bits used to determine the integrity of the FAS Data Block data during transmission and storage. This information will be computed electronically with use of the electronic transmittal software and documented on Form 8260-10 (see figures A12-1 and A12-2).

Example:

CRC Remainder: E104FC14

u. ICAO Code. The first two designators of the ICAO location identifier, as identified in ICAO Doc 7910. In the Continental United States, the country code will begin with the letter "K" followed by a numeric character obtained from figure A12-3. Alaska, Hawaii, and U.S. Possessions will be as described in the ICAO Doc 7910.

Example:

K1, K7, PH, PA, MM, ER

v. Orthometric Height. The height of the LTP or FPAP, as related to the geoid, and presented as an MSL elevation defined to a tenth of a meter resolution with the decimal point suppressed. For the purpose of documenting this in the "Additional Path Point Record Information," the LTP and FPAP orthometric height will be the same and based on the LTP elevation. The value is preceded by a "+" or "-".

Example:

+00362 (+36.2m), +02478 (+247.8m), -00214 (-21.4m)

w. Horizontal Alert Limit (HAL). The HAL is the radius of a circle in the horizontal plane (the local plane tangent to the WGS-84 ellipsoid), with its center being at the true position, that describes the region which is required to contain the indicated horizontal position with the required probability for a particular navigation mode assuming the probability of a GPS satellite integrity failure being included in the position solution is less than or equal to 10^{-4} per hour. The range of values is 0 to 50.8m with a 0.2 resolution. The HAL for LPV procedures is a fixed value at 40.0 meters.

Note: A HAL is not part of the FAS data block/CRC wrap for LAAS procedures.

Example:

HAL 40.0

x. Vertical Alert Limit (VAL). The VAL is half the length of a segment on the vertical axis (perpendicular to the horizontal plane of the WGS-84 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 HATh/HAT is 250 feet or greater. If an LPV procedure has been established to support a HATh/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

APPENDIX 13. RESERVED

FINAL APPROACH SEGMENT (FAS)

DATA BLOCK CYCLIC REDUNDANCY

CHECK (CRC) REQUIREMENTS

FOR HELICOPTER OPERATIONS

APPENDIX 13. FINAL APPROACH SEGMENT (FAS) DATA BLOCK CYCLIC REDUNDANCY CHECK (CRC) REQUIREMENTS FOR HELICOPTER OPERATIONS - RESERVED

APPENDIX 14.

ARINC 424 DATABASE CODES

APPENDIX 14. 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 A14-1. 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 A14-1. 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 A14-1:

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.