CHANGE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

National Policy

8260.19D
CHG 3

Effective Date:
10/22/2009

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.

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 105. Added FAA Form 8260-30A reference.

(2) Paragraph 112. Editorial change was made.

(3) Paragraph 122. Editorial change was made.

c. CHAPTER 2.

(1) Paragraph 212. Editorial change was made.

(2) Paragraph 217. Expanded Magnetic Variation guidelines for RNAV.

(3) Paragraph 221. Updated United States NOTAM system naming.

(4) Paragraph 222. Revised FDC NOTAM submission requirements.

(5) Paragraph 226. Updated General NOTAM D Action requirements.

(6) Paragraph 227. Updated Air Traffic Service Route NOTAMs requirements.

(7) Paragraph 241. Added guidance to consider new circling area impact on airspace boundaries.

(8) Paragraph 264c. Changed fix movement limitations from 5 NM to 1 NM.

(9) Paragraph 280. Updated note to identify new approval office as AFS-460.

d. CHAPTER 3.

(1) Paragraph 360. Update MVA and MIA charting requirements.

e. CHAPTER 4.

(1) Paragraph 405. Expands and clarifies guidance regarding Sidestep Maneuvers.

(2) Section 3. Removed VDP guidance, now incorporated into Order 8260.3B. RESERVED paragraphs 430 through 439.

(3) Paragraph 440. Expanded and clarified revisions to figure 4-1.

(4) Paragraph 441. Expanded and clarified procedures for processing Special Instrument Approach Procedure requests.

(5) Paragraph 442. Expanded and clarified the required content in a Special Instrument Approach Procedure package.

(6) Paragraph 446. Updated the distribution requirement.

(7) Figure 4-1. Updated graphic with revised Specials process.

(8) Paragraph 460. Editorial; HGS changed to HUD.

(9) Paragraph 493. Editorial.

(10) Paragraph 495. Expanded guidance regarding final approach segment (FAS) data.

f. CHAPTER 5.

(1) Figure 5-4a. Added graphic to support terminal airspace.

(2) Paragraph 507. Expanded and clarified guidance regarding terminal airspace.

(3) Paragraph 517. Editorial changes were made.

g. CHAPTER 8.

(1) Paragraph 811. Expanded and clarified guidance regarding certification and distribution of standard instrument approach procedures (SIAPs).

(2) Paragraph 841. Expanded and clarified guidance regarding the preparation of FAA Form 8260-2,and when Docket action is not required.

(3) Paragraph 852. Editorial.

(4) Paragraph 854. Expanded and clarified guidance regarding sidestep minimums.

(5) Paragraph 855. Editorial.

(6) Paragraph 856. Editorial.

(7) Paragraph 857. Added guidance regarding DME facility.

(8) Paragraph 858. Editorial.

(9) Paragraph 860. Editorial.

(10) Paragraph 871. Expanded and clarified guidance regarding FAA Form 8260-4, RADAR.

h. APPENDIX 1. Added the NA and N/A acronyms.

i. APPENDIX 5. Updated FAA Form 8260-2 examples.

j. APPENDIX 13. Added FAS Data Block CRC Requirements for Helicopters

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Original Signed by
John M. Allen

John M. Allen
Director, Flight Standards Service

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FAA Form 8260-16	Transmittal of Airways/Route Data
FAA Form 8260-20	U.S. Army/U.S. Air Force Standard Instrument Approach Procedure (Continuation Sheet)
FAA Form 8260-21A	U.S. Army Departure Procedures/Takeoff Minimums
FAA Form 8260-21B	U.S. Army/U.S. Air Force Standard Instrument Departure (SID)
FAA Form 8260-21C	U.S. Army/U.S. Air Force Departure (Data Record)
FAA Form 8260-30A	Simulator Evaluation Checklist
FAA Form 8260-30B	Obstacle Assessment Checklist
FAA Form 8260-30C	Flight Validation Checklist

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.

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 800c]. 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.

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

d. Facility rotation due to magnetic variation change should have no effect on coverage; however, radials used will change. The NFPO initiates a change action via the Spectrum Management web site (ESVMS) on the date the rotation is effective. Prior to the publication cut-off date the NFPO will provide flight inspection a list of the currently approved ESVs against the effected facilities with the new radials and publication date annotated for review/action as appropriate.

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

f. An ESV is prepared and processed electronically via the Expanded Service Volume Management System via the FAA Intranet web site. An ESV can be placed on any VOR, ILS-DME, or TACAN. When a DME or TACAN and VOR are paired, both must have identical ESVs for safety reasons (except in those cases where the DME ESV supports DME/DME RNAV operations). ESVs may be added to any class of navaid facilities, including NDBs.

211. UTILIZATION OF LOCALIZERS AS EN ROUTE AIDS.

The use of a localizer in en route flight procedures may be authorized in accordance with the following limitations:

a. The use of the localizer for course guidance must start and end at an approved navigational fix.

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

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

212. MONITORING OF NAVIGATION FACILITIES.

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

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

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

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

(3) Category 3. Internal monitoring only.

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

213. UTILIZATION OF MONITORING CATEGORIES.

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

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

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

(1) Alternate minimums must not be authorized if facility provides final approach course guidance; is required for procedure entry; is used to define the FAF; or is used to provide missed approach guidance. See also paragraph 853b.

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

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

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

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

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

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

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

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

214. UTILIZATION OF 75 MHz MARKERS.

The 75 MHz markers may be used as the sole source of identification with the following limitations:

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

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

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

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

e. DP Turn Points. The 75 MHz markers must not be used to identify turn points on Departure Procedures. See Order 8260.46, *Departure Procedure (DP) Program*, paragraph 10.

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 (1 degree or more for those airports having CAT II/III ILS procedures), the MV of record must be changed to the nearest future Epoch Year value. When the difference is less than 3 degrees (1 degree for CAT II/III ILS airports), 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. For GNSS holding patterns not associated with an instrument procedure, determine the magnetic variation by using the magnetic declination (variation) for the holding fix latitude/longitude. This information may be calculated using the National Geophysical Data Center (NGDC) website. 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. UNITED STATES NOTAM SYSTEM.

The United States NOTAM System (USNS) 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., 08/018).

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 except that a single P-NOTAM may be used for ILS CAT I/II/III procedures to the same runway.

(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 225a, b, 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.

(7) P-NOTAMs affecting procedure amendments must be promulgated in the bi-weekly Transmittal Letter (TL) with a specified Aeronautical Information Regulation and Control (AIRAC) charting date. The purpose is to ensure that all charting agencies publish the amended procedure on the same date.

(8) Each AIRAC cycle is limited to no more than 150 P-NOTAMs.

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 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 is 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 AIRSPACE BORDER THREE DEPARTURE JULIAN TRANSITION: FROM OVER BROWS INT VIA JLI R-182 TO JLI VORTAC
USD XX/XXX LAX AIRSPACE 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; "AIRSPACE" is the NOTAM key word; the remainder is the NOTAM text.

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

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

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

(2) For SIDs serving multiple air-ports, 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 NOTAM D is used to disseminate other safety of flight information that does not fall under the FDC NOTAM process; e.g., changes in any aeronautical facility, service, procedure, or hazard, that is deemed essential to personnel concerned with flight operations. NOTAM Ds use key words; e.g., AIRSPACE, NAV, COM, SVC, RWY, etc., to identify subject matter. Refer to Order 7930.2, NOTICES to Airmen (NOTAMs) for additional key words and formatting requirements.

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. Air Traffic Service (ATS) ROUTE NOTAMs.

Under 14 CFR, Part 71.13, The term "ATS route" refers to a variety of routes, including airways, jet routes, and area navigation (RNAV) routes. When a restriction or a change to an ATS Route requires a NOTAM, NFPO must prepare and forward an FDC T-NOTAM following the procedures in paragraph 223. The keyword "ROUTE" will follow "FI/T" in the NOTAM text - see example below paragraph 227b.

a. NOTAMs, reflecting ATS Route changes within one or more ARTCC's airspace, are issued under the affected ARTCC identifier as Center Area NOTAM (CAN) FDC NOTAMs on the NOTAM circuit. The formats

specified in Order 7930.2, chapter 7, section 1 must be followed regarding the number of ARTCCs and states affected.

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

Examples:

"FDC 8/0001 ZFW OK FI/T **ROUTE** ZFW ZKC. V140 SAYRE (SYO) VORTAC, OK TO TULSA (TUL) VORTAC, OK MEA 4,300.

FDC 8/0002 ZKC OK FI/T **ROUTE** ZFW ZKC. V140 SAYRE (SYO) VORTAC, OK TO TULSA (TUL) VORTAC, OK MEA 4,300.

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

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

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

e. 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 approved NOTAM issuing authority 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 223b. 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 must include all procedures at that airport [see paragraph 811a].

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

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

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

(5) Verify current magnetic variation values.

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

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

(8) 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.

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

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

c. Fixes.

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

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

d. All Procedures.

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

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

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

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

242.-249. RESERVED.

SECTION 9. COMMUNICATIONS AND WEATHER

250. COMMUNICATIONS REQUIREMENTS.

Order 8200.1, *U.S. Standard Flight Inspection Manual*, chapter 8, defines communication tolerances and flight inspection procedures. Even though gaps in navigation course guidance may be approved, reliable communications coverage over the entire airway or route segment at minimum en route IFR altitudes must be available.

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

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

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

251. USE OF UNICOM.

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

a. Revision of proposed departure time.

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

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

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

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

252. AUTOMATIC ALTIMETER SETTING AND WEATHER REPORTING SYSTEMS.

Approved devices for automatically reporting altimeter settings and weather may be used to satisfy the requirements of Order 8260.3, Volume 1, paragraph 122d. Special notes will be required on the approach charts. Examples of standard notes can be found in paragraph 855f.

253.-259. RESERVED.

SECTION 10. NAVIGATIONAL FIXES

260. GENERAL.

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

261. REPORTING POINTS.

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

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

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

262. UNPLANNED HOLDING AT DESIGNATED REPORTING POINTS.

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

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

263. REQUESTS FOR NAVIGATIONAL FIXES.

a. Form 8260-2 is the vehicle used to transmit requests for the establishment, revision, or cancellation of navigational fixes, holding patterns, and/or reporting points. All fix requests must be processed through the NFPO. The NFPO may initiate Form 8260-2 for those navigational fixes that are required for the development of IFPs. Other operationally required navigational fixes must be coordinated with the appropriate ATC facility [see chapter 8, section 6].

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

264. NAMING NAVIGATIONAL FIXES. In order to satisfy the requirements of the Flight Management System (FMS), the following applies for all procedures:

a. All navigational fixes must be named. Exceptions: Fixes used for navigation not to be named include Visual Descent Points (VDPs), radar fixes used on ASR and/or PAR procedures, RNAV missed approach point at threshold, and an ATD fix located between the MAP and the landing area marking the visual segment descent point on COPTER RNAV PinS approach annotated "PROCEED VISUALLY." 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 must be moved, refer to JO 7400.2, *Procedures for Handling Airspace Matters*, for guidance on whether the 5-letter name may be retained or must be changed.

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.

SECTION 12. WAIVER OF STANDARDS

280. GENERAL.

Submit a request for a waiver of flight procedures standards on an approved computer generated Form 8260-1, *Flight Procedures Standards Waiver*, [see paragraph 830]. Each waiver request will be considered ONLY when there is no other suitable way to resolve a procedural problem, or to provide a required service. The waiver is used to officially document the nonstandard application of criteria, and serves as a means to identify criteria that may require further refinement or to identify problem areas.

Note: Those items identified in Order 8260.3B as "requires approval by Flight Standards Service" (e.g., GP angle above 3.00 degrees, climb gradient in excess of 500 ft/NM, etc.,) are not to be interpreted as a requirement for a waiver and do not require completion of a Form 8260-1. A request of this type is made in plain text by memorandum and submitted to AFS-460 for approval.

281. WAIVER PROCESSING.

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

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

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

c. Enter only one waiver request on the waiver form.

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

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

Note: The CRM does not assess Category E aircraft.

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

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

282. WAIVERS FOR SPECIAL INSTRUMENT APPROACH PROCEDURES.

Except for proponent-developed procedures, when a waiver is approved for a special instrument approach procedure, Flight Standards must coordinate with the appropriate FSDO concerning any special conditions that may be imposed on the use of a special authorization. This action is necessary to establish required supervision to ensure user compliance with equivalent level of safety provisions. For

example, special aircrew training may be required as an equivalent level of safety.

283. SAFETY MANAGEMENT SYSTEM (SMS) REQUIREMENTS.

a. The FAA's Safety Management System Doctrine requires that existing, successful processes be modified only so far as to make certain that the intent of the Safety Risk Management (SRM) process is being fulfilled. A SRM process ensures that:

(1) Safety-related changes are documented.

(2) Risk is assessed and analyzed.

(3) Unacceptable risk is mitigated.

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

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

(1) Navigation capabilities and navigation performance.

(2) Suitable weather reporting facilities.

(3) Operator certification and training.

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

(5) Traffic density and distribution.

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

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

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

(9) Human factors issues.

284. PERIODIC REVIEW OF WAIVERS.

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

285. CANCELLATION OF WAIVERS.

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

b. Distribution of a canceled waiver must be made to the same organizations that received the approved waiver [see paragraph 830].

286.-299. 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 area of consideration and 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 8260.3, U.S. Standard for Terminal Instrument Procedures (TERPS), Volume 1, chapter 10. NFPO personnel may be requested to participate in original chart development at the option of the ATC facility.

361. OBSTACLE CLEARANCE.

Required obstacle clearance and associated additives and/or reductions are as specified in Order 8260.3, Volume 1, Chapter 10.

362. CONTROLLED AIRSPACE. Controlled airspace (and associated buffers) considerations required by Order 8260.3, Volume I, Chapter 10 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.

363. CHART REVIEW AND APPROVAL.

a. Civil Vectoring Charts.

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

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

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

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

364. EMERGENCY OBSTRUCTION VIDEO MAP (EOVM).

a. Establishment. An EOVM is established by ATC at all terminal radar

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

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

365.-399. RESERVED.

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

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

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

(3) For RNAV final approach areas, the width is as specified in the applicable chapter of FAAO 8260.54. Evaluate both LP and LNAV final approach areas when the procedure contains an LP line of minimums. The higher minima applies for the sidestep maneuver.

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

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

h. Apply a standard visual area to the sidestep runway and assess the 20:1 surface. If penetrated, mark and light the obstacle or publish a note denying the sidestep maneuver at night unless the conditions of FAAO 8260.3B, Volume 1, paragraph 3.3.2d(2)(d) are satisfied.

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

(1) Minimum HAA values specified within table 3-9 do not apply. Substitute HATh for HAA within table 3-10. Apply table 3-10 only if the HATh falls within the range of the table. Table 3-11 does not apply.

(2) One-half mile visibility reduction is authorized when a full approach light system (FALS) is installed to the sidestep runway. The minimum visibility after applying this reduction must not be less than 1 mile.

(3) When the sidestep runway threshold is offset more than 1,000 ft closer to the FAF than the runway with course guidance, increase the published visibility by an additional ¼ SM or by the actual offset distance, whichever is greater.

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

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

Minimums block:

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

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.

SECTION 3. RESERVED

430.-439. RESERVED.

SECTION 4. SPECIAL INSTRUMENT PROCEDURES PROCESSING

440. INITIATING A REQUEST FOR SPECIAL INSTRUMENT PROCEDURES. Proponents may initiate Special instrument procedure requests using the Internet Web site http://avn.faa.gov/index.asp?xml=ifp/ifpform. Proponents that plan on developing their own instrument procedures should submit their proposal through their principal operations inspector (POI) or Flight Standards District Office (FSDO) prior to it being submitted to the applicable RFSD-AWOPM for submission to the Regional Airspace and Procedures Team (RAPT) for action. See figure 4-1 for procedure processing flow diagram and paragraph 442 for procedure package content requirements.

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

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

Note 3: See figure 4-1 for differences in process flow for FAA/AJW-32 and Third Party developed Special procedures.

441. PROCESSING REQUESTS.

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

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

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

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

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

(5) With RFSD-AWOPM approval, issue the approved procedure under Order 8900.1, *Flight Standards Information Management System (FSIMS),* Volume 4, chapter 2, section 10. If additional users will be authorized, the applicable POIs and RFSD-AWOPMs must be notified.

(6) Forward a copy of the proponent's approved charted procedure to AFS-460, the NFPO, the originating RFSD-AWOPM, and the controlling ATC facility. The POI must not authorize operational implementation of the procedure until the published chart is returned to the AWOPM.

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

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

b. RFSD-AWOPM Action.

(1) Participate as CORE RAPT member.

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

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

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

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

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

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

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

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

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

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

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

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

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

c. National Flight Procedures Office (NFPO) Action.

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

(2) Coordinate reimbursable agreements as appropriate.

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

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

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

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

(7) Coordinate flight inspection of the procedures.

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

(9) Maintain a procedure package file for each Special procedure developed and/or maintained.

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

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

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

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

(1) Participate as a NAPT member.

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

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

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

e. AFS-200/800 Action.

(1) Participate in PRB as deemed necessary.

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

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

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

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

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

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

(3) Special procedures based on STANDARD published criteria.

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

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

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

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

(c) Develop Flight Standards Information Bulletins as required.

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

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

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

(1) Special procedures based on STANDARD published criteria.

(a) Determine necessity for Division PRB reviews.

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

(c) Facilitate the Division PRB.

(d) 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. See paragraph 228 for additional information on NOTAMs for Special instrument procedures.

(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 1: Additionally, see Order 8200.1, section 214, for additional flight inspection requirements.

Note 2: Except for those procedures certified by FAA Flight Inspection IAW 8200.1, RNAV Special procedure packages submitted to AFS-400 (AFS-460) for processing, also require Flight Validation (FV) and documentation per Notice 8260.66 and/or subsequent FV criteria, policy, or requirement.

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. Special instrument procedures will only be issued in accordance with the provisions of this order, except as provided in sub-paragraph (b).

b. Requests for any information relating to the development of special instrument procedures, or the approved procedures, made in accordance with the provisions of the Freedom of Information Act (FOIA), 5 U.S.C. 552, will be handled separately in accordance with the FOIA and FAA Order 1270.1, *Freedom of Information Act Program.* Responses to such requests will be coordinated through AFS-400 and release determination will be made on a case-by-case basis.

446. DISTRIBUTION. Responsible offices distribute forms as follows:

AFS-460
Original to: File
Copies to: NFPO
NFDC
RFSD-AWOPM
Non-Federal Developer
(as appropriate)

Region FSD-AWOPM
Copies to: FSDO/CMO for the proponent
FSDO for the airport
Airport Manager
Applicable Service Area
Other distribution
(As required)

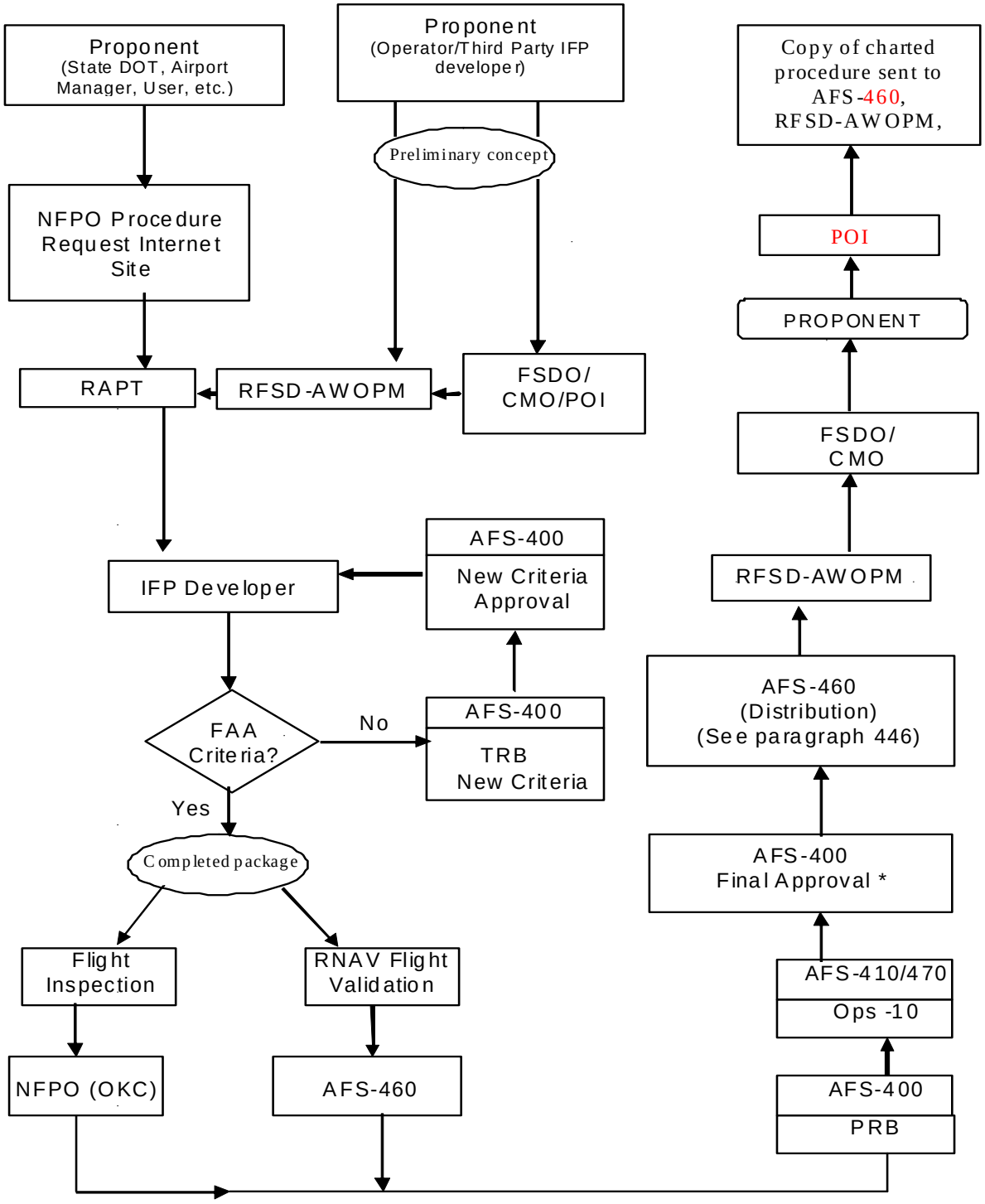
FSDO/CMO
Copy to: Proponent(s) and other approved operators

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

Proponent
Copy to: Applicable 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 6. CATEGORY II AND III ILS

460. GENERAL.

a. Guidance. The following directives (latest editions) contain criteria/guidance to be used to determine whether an airport/runway is suitable to support ILS CAT II and III procedures:

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

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

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

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

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

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

(7) AC 150/5300-13, *Airport Design*

(8) AC 120-57, *Surface Movement Guidance and Control System (SMGCS)*

Note: There are other orders and ACs that apply to specific runway equipment, placement of hold signs/lines, etc. as well as navigational aid installation requirements. The above list would, in most cases, lead the reader to the other references. A full list of reference documents for all aspects of the procedures function is contained in Appendix 2 of this order.

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

c. A detailed explanation of the characters used to identify a facility's class of performance is contained in Order 6750.24, appendix 2. The first character (I, II, or III), ILS International Civil Aviation Organization (ICAO) standards, is determined jointly by flight inspection and engineering personnel. The second character (A, B, T, D, or E), localizer course structure, is determined solely by flight inspection personnel. The third character (1, 2, 3, or 4), ILS integrity and continuity, is determined solely by engineering personnel.

d. Irregularities on pre-threshold terrain or HUD/autoland system/radio altimeter characteristics might adversely affect radio altimeter indications and thus affect autoland performance of some aircraft. Until or unless these aircraft demonstrate normal radio altimeter readings and acceptable HUD/autoland operations on that runway, and this fact is listed in their operations specifications, they cannot conduct CAT III HUD/autoland operations. AFS-410/470 acts as the clearing house for listing which combinations of HUD/autoland systems/runways are or can be approved, and is positioned for receipt of information from Flight Inspection, AJW-0, ATC, Airports, and airport authorities regarding irregular underlying terrain situations at new runways or runways at which future CAT III procedures are proposed.

461. ACTION.

a. Regions.

(1) Applicable Technical Operations Service Areas and NFPO coordination is essential. The NFPO, having been informed of the need for (and suitability of a runway to support) CAT II and III must assure obstacle clearance requirements.

(2) RFSD-AWOPM coordinates the procedure request with the RAPT. The RFSD-AWOPM is also responsible for coordinating the CAT II/III checklists and will notify AFS-410/470 when CAT II or III checklists are complete. Notification must contain the information obtained from the NFPO [see paragraph 461b(1)].

b. NFPO.

(1) The NFPO must advise the regional FSD when a CAT II or III system has passed flight inspection. Notification must contain the following information:

(a) Airport.

(b) Runway.

(c) Flight inspection completion date.

(d) Facility classification.

(e) Minimums:
CAT II DA and RA.
CAT III a/b/c RVR
(as appropriate).

(f) Date approach procedure will be available.

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

c. Flight Inspection Central Operations (FICO) Technical Services Sub-Team must maintain the current ILS performance classifications in the Aviation System Standards Information System (AVNIS) database. The applicable Technical Operations Service Area must notify the Flight Standards Division and Flight Inspection Technical Operation Group of individual ILS facility performance classification determinations, and any change in the performance class of a facility, so that changes in CAT III authorizations can be made.

d. AFS-410/470 CAT II/III Status List Web Site. This notification will provide operators with the planned availability of the new minimums for preparation of operations specifications prior to publication of the SIAP.

462. NOTAM REQUIREMENTS.

When any component of the ILS system fails to meet the appropriate performance tolerances, the Air Traffic Vice President of Technical Operations issues a NOTAM (D) for suspension of CAT II/III minimums. If the suspension will exist longer than 224 days or will be permanent, the NFPO must submit an abbreviated or full amendment [see also paragraph 226d].

463.-469. RESERVED.

substantially more airspace to protect for the turn than FB fixes, and should be used only where special design problems necessitate.

b. FAA 8260-series forms must document waypoint type and waypoint description codes for all waypoint fixes used in RNAV procedure design. Because of the different obstacle assessments conducted, FO and FB information is critical to flight crews and should be consistently displayed on aeronautical charts and in navigational databases. The waypoint type (FO/FB) is documented on Forms 8260-3/5/7 as applicable [see paragraph 851a(6)]. For agencies providing a complete ARINC record printout of a procedure on Form 8260-10, waypoint description codes entries are not required.

c. En Route. Do NOT establish RNAV WPs at National Airspace System (NAS) en route facilities. Do NOT establish RNAV WPs at en route fixes when used as feeder fixes for RNAV procedures.

d. Terminal. Develop terminal use RNAV WPs based on usage as follows:

(1) Missed Approach Point (MAP). Normally the MAP is at the threshold but may be located prior to the threshold, on or off runway centerline.

(a) MAP Located at Threshold. The landing threshold is contained in the runway file in the RNAV database, and identified by ARINC code for the threshold. Do NOT document a MAP located at the landing threshold on an 8260-2.

(b) MAP not Located at Threshold. The landing threshold will be the reference point. True bearing is from reference point to MAP. If the MAP is on runway centerline extended, use the reciprocal of the landing runway true bearing. Distance is from reference point to MAP.

(2) Final Approach Fix (FAF). Establish the location of the FAF as a true bearing and distance as follows:

(a) Final approach course aligned through threshold. Use landing threshold as reference point.

(b) Final approach course not aligned through threshold. Use MAP as reference point.

(3) Intermediate Fix (IF). Establish the location of the IF as a true bearing and distance as follows:

(a) No Course Change at FAF. Utilize the same reference point used to establish the FAF.

(b) Course Change at the FAF. Use the FAF as the reference point.

(4) Initial Approach Fix (IAF). Establish the location of the IAF as a true bearing and distance as follows:

(a) No Course Change at the IF or FAF: Utilize the same reference point used to establish the FAF.

(b) No Course Change at the IF, with a course change at the FAF. Use the FAF as the reference point.

(c) Course Change at the IF. Use the IF as the reference point.

(5) Feeder Fix. If a WP is required for use as a feeder fix, and will NOT be an en route fix, establish the location of the feeder fix as a true bearing and distance as follows:

(a) No Course Change at the IAF. Utilize the same reference point used to establish the IAF.

(**b) Course Change at the IAF.** Use the IAF as the reference point.

(6) Missed Approach. For all WPs in the missed approach, after the MAP, use the preceding WP as the reference point.

(7) Stepdown Fixes Within Segments. Establish the location of waypoints used as stepdown fix(es) within a segment as a bearing and distance FROM the waypoint/fix that marks the beginning of the next segment in the procedure sequence (e.g., IAF, IF, FAF, etc.). For example, the forward true bearing from IF to IAF is 290.34 degrees. Establish the coordinates for stepdown fix waypoints on

bearing 290.34 degrees from the IF at the desired distance(s) between the IF and IAF.

Note: Use this method to determine stepdown fixes in ALL segments.

493. RNAV LEG TYPES.

a. Different types of arrival, approach, departure, and en route segments are required for RNAV. Consideration of these requirements during procedure design will result in a more efficiently designed flight path for all operators using airspace; particularly those equipped with computer-based navigation systems. These systems require encoding RNAV route segment flight paths into a format usable in navigation databases.

b. The aviation industry has adopted a route segment definition called "path and terminator." This concept is used for transforming arrival, approach, and departure procedures into coded flight paths that can be interpreted and used by a computer-based navigation system. A path terminator instructs the aircraft to navigate from a starting point along a defined path to a specified point or terminating condition. The path terminators are identified by a set of two alpha-characters, each of which has a meaning when describing a flight maneuver to a navigation computer. The first character indicates the types of flight path to be flown, and the second indicates where the route segment terminates. For example, a designated route from a NAVAID to a fix would be coded as "TF." The "T" indicates that a track is to be flown, and the "F" indicates that the segment terminates at a fix. There are over twenty different path and terminator sets ("leg types") used by the aviation industry to accommodate the coding of procedure route segments. However, only a limited few are suitable for use in RNAV procedure design.

c. Document leg type codes on 8260-series forms in accordance with applicable instructions in chapter 8 and Order 8260.46. For agencies providing a complete ARINC record printout of a procedure on Form 8260-10, these entries are not required.

494. RNAV LEG TYPE DESCRIPTIONS.

a. Initial Fix (IF). This is the point or fix where a flight segment begins. An IF is not a route segment and does not define a desired track in and of itself. It is used in conjunction with other leg types such as a TF leg in order to define the desired segment.

Note: "IF" in this context is not to be confused with initial approach fix (IAF) or intermediate fix (IF); however, it may be located at one of these locations for coding purposes.

b. Track-to-Fix (TF) Leg. This designates a track or geodesic path between two fixes. If the TF leg is the first route segment of a flight path, the TF leg begins at an IF; otherwise, the first fix of the TF leg is the termination fix of the previous route segment. The TF leg is the primary straight route segment for RNAV.

c. Constant Radius to a Fix (RF) Leg. An RF leg defines a curved path route segment about a defined turn center that terminates at a fix. The RF leg begins at the termination fix of the previous route segment. The previous segment is tangent to the arc of the RF leg at that fix. Waypoints defining the beginning **and** end point of the RF turn must be designated as "Fly-by."

d. Course-to-Altitude (CA) Leg. The CA leg is used to code the initial leg at the beginning of the missed approach segment (See Order 8260.52, Chapter 4, for exception when developing RNP procedures). This leg type requires a stated course and altitude at the beginning of the missed approach. This altitude will be the lowest of DA, MDA, or 400-ft above airport elevation (for helicopter point-in-space procedures, use lowest DA or MDA). A DF leg must always follow a CA leg. Additionally, a CA leg may be used in coding departure procedures which define a specified course to a specific altitude at an unspecified position.

e. Direct-to-Fix (DF) Leg. A DF leg is used to define a route segment (geodesic path) that begins at an aircraft present position, or unspecified position, and extends to a specified fix.

f. Heading-to-an-Altitude (VA) Leg. The VA leg is used in a departure route segment where a heading rather than a track has been

specified for climb. The VA segment terminates at a specified altitude without a terminating position defined.

g. Course-to-Fix (CF) Leg. The CF leg is defined as a magnetic course that terminates at a fix.

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

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

495. FINAL APPROACH SEGMENT (FAS) DATA.

a. FAS data is described and attained using established TERPS criteria in Order 8260.3, Volume 3. This data is compiled and formed into what is called the FAS Data Block. The method of protection required for this flight data is known as the Cyclic Redundancy Check (CRC).

b. Document FAS Data Block information on Form 8260-10. Guidance on producing data that are placed on this form is located in appendix 11. For agencies providing a complete ARINC packet record on Form 8260-10, the FAS Data Block information is not required on a separate Form 8260-10.

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

496. REMOTE ALTIMETER SETTING FOR BARO-VNAV.

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

497. CRITICAL TEMPERATURE.

Temperature limits above and below which Baro-VNAV operations are not authorized are published on RNAV instrument approach procedures. TERPS criteria provide the formulas to compute the critical temperatures for the airport of intended landing based on a given deviation from International Standard Atmosphere (ISA) for the airport elevation. For RNAV GPS procedures, use "**Chart note: For uncompensated Baro-VNAV systems, LNAV/VNAV NA below ____°C (____°F) or above____°C (____°F).**" For RNAV RNP procedures, use "**Chart note: For uncompensated Baro-VNAV systems, Procedure NA below ____°C (____°F) or above____°C (____°F).**" Maximum temperature published shall not exceed **54°C (130°F)**. Document actual high temperature in the remarks section of Form 8260-9. Document the ISA deviation value used, if other than standard, in the remarks section of the Form 8260-9.

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

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

498. DME/DME SCREENING MODEL.

Apply the RNAV-Pro DME screening model to ensure satisfactory availability and geometry of DME navigation signals for RNAV instrument approach (when requested) and departure procedures and RNAV "Q" routes to support use of flight management system (FMS)-equipped aircraft that are DME/DME capable. Flight inspection will record the coverage and accuracy of the facilities identified by the screening model. Further analysis of the screening model will determine if the data obtained are satisfactory to support the procedure.

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

a. Enter a 5-digit WAAS/LAAS channel number into the Additional Flight Data block of the 8260-series form [see paragraph 857l(3)]. A block of WAAS channel numbers is allocated to the National Flight Procedures Office by the

National Flight Data Center. LAAS channel numbers must be calculated using a specific frequency that is currently obtained from Region Spectrum Management Office. LAAS channel numbers also must be obtained for each IAF. If there are no IAFs (e.g., a RADAR REQUIRED procedure), a single channel number is still required. This paragraph does not apply to RNAV RNP procedures.

b. Enter Approach ID, e.g., **W09A/L18A** into the Additional Flight Data block of the 8260-series form [see paragraph 857l(3)]. This is the same as the Reference Path Identifier described in appendix 12 and is part of the FAS Data Block. This paragraph does not apply to RNAV RNP procedures.

c. Enter "Critical Temp" data as specified in paragraph 497.

d. Due to limited WAAS coverage at certain locations, a restriction may be required on procedures where WAAS can be used for vertical navigation on a procedure containing LNAV/VNAV minima. This restriction is portrayed on the instrument procedure chart with a negative-type "W" icon that signifies WAAS signal outages may occur daily and that these outages will not be NOTAM'd. At locations where LNAV/VNAV minima are published and it has been determined that there is no WAAS coverage whatsoever, a note will be placed on the approach plate that reads "**WAAS VNAV NA.**" Document this in the Notes Section of the Form 8260-3/7 as: "**Chart note: WAAS VNAV NA.**"

e. For RNAV (GPS) procedures where DME/DME RNP-0.3 is not authorized, use "**Chart note: DME/DME RNP- 0.3 NA.**" Where DME/DME RNP-0.3 is authorized, use "**Chart note: DME/DME RNP-0.3 Authorized.**" Where DME/DME RNP-0.3 is authorized only when required facilities are necessary for proper navigation solution, use "**Chart note: DME/DME RNP-0.3 Authorized; ABC and XYZ DMEs must be Operational.**" For RNAV (RNP) procedures, the use of GPS is required; use "**Chart note: GPS Required.**"

f. Document the Approach Route Type Description and Qualifier Description in the Additional Flight Data Block. These descriptions are in the form of an alpha character and found in ARINC Standard 424, *Navigation Database*, paragraph 5.7. Also see paragraph 857l(3). For agencies providing a complete ARINC record printout of a procedure on Form 8260-10, these entries are not required.

g. Enter Terminal Arrival Area (TAA) data as directed by Order 8260.45. Determine if the use of "(NoPT)" is appropriate and document accordingly.

h. Document the Waypoint Description Code as defined in ARINC Standard 424 on the applicable 8260-series form [see paragraph 851a(6)]. For agencies providing a complete ARINC record printout of a procedure on Form 8260-10, these entries are not required.

i. Document the RNP value (e.g., RNP 1.0 or RNP 0.15) used for each segment (except the final segment) in the "TO" block of the "Terminal Routes" section on Form 8260-3 [see paragraph 851a(6)]. For agencies providing a complete ARINC record printout of a procedure on Form 8260-10, these entries are not required. Additionally, when the RNP for feeder, initial and/or intermediate segments are less than standard (RNP 2.0 for feeder, RNP 1.0 for initial and/or intermediate), a note must be placed adjacent to the feeder fix or IAF stating the required RNP value. Document this in the "Notes" section of Form 8260-3. Use "**Chart planview note at (fix name): (RNP 0.X or 0.XX).**"

j. RNAV (RNP) speed restrictions [See Order 8260.52] must be noted on the chart. Use "**Chart planview note at LUCIG: Max 190 KIAS**." For missed approach, specify the point at which the restriction is no longer required. Use "**Chart planview note at NILCI: Max 200 KIAS until HIVUD.**"

k. Certain RNP equipped aircraft may not be capable of flying procedures that contain RF turns, so the entire procedure or segment of the procedure must be annotated with a "RF required" to alert the pilot of this limitation. Use **either** the note specified in paragraph 499k(1) or (2):

(1) Use "**Chart note: RF Required**" when ONE of the following conditions exist:

(a) ALL terminal routes leading to the intermediate fix require an RF turn.

(b) The intermediate, final, or missed approach segment requires an RF turn.

OR

(2) If an RNP procedure can be flown from an IAF without RF turns in any **segment** (including missed approach) and there are RF turns required when initiating the approach from other IAFs on the chart, a note must be placed adjacent to the IAF(s) affected. Use "**Chart planview note adjacent to (name) IAF: RF Required.**"

l. RNP criteria require a 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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CHAPTER 5. AIRSPACE

SECTION 1. OBSTRUCTION EVALUATION (OE).

500. GENERAL.

The Code of Federal Regulations (14 CFR), Part 77, requires that the Administrator be notified prior to the construction or alteration of structures that might present a hazard to flight. Form 7460-1, *Notice of Proposed Construction or Alteration*, is the medium for that notification of construction or alteration.

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

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

502. REVIEW OF NOTICES.

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

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

b. Departure Obstacle Assessments. There are occasions when a proposed object located near a Title 14 CFR Part 139 commercial service airport that could have an adverse effect on certificated air carrier one-engine inoperative (OEI) departure considerations. AC 150/5300-13, *Airport Design*, contains guidance for airports regarding objects that should be identified that penetrate the OEI obstacle identification surface (OIS) that starts at the departure end of the runway at the elevation of the runway at that point, and slopes upward at 62.5:1. The RSFD-AWOPM may be asked to provide an analysis of potential OEI impact to assist airport operators if an OE evaluation is conducted for an on-airport structure - vice processing an NRA proposal. The ATO, or in some cases the Regional Airport Division, may also seek the input of FS on unusually sensitive cases that generate significant user comments or concerns involving departure obstacles near airports. In any event, FAA policy currently does not specifically address a determination of hazard for off-airport obstacles where identified impacts are due solely to OEI procedures. The AWO may use the AFS-400 developed evaluation tool, RNAV-Pro, to provide input to the ATO and/or an airport operator regarding potential adverse effects on OEI. This tool is not intended to supply FAA certified engineering quality aircraft performance solutions. It provides a screening device for Flight Standards inspectors to

generally quantify whether proposed objects near a known departure path may have an effect on Title 14 CFR Part 25 certificated aircraft operational requirements and the regulatory requirements for lateral aircraft obstacle avoidance. Where general input is desired at a major air carrier airport (domestic or international), the inspector should consider providing evaluations of both the FAA recommended OEI surface (AC 120-91) as well as the International Civil Aviation Organization (ICAO) splay. The ICAO splay could provide useful information for an airport operator, ATC and/or operators when considering required NOTAM action and coordination for temporary objects near the airport or under the control of the airport operator. At this time, all OEI input to the OE process by the RFSD is considered advisory.

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

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

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

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

g. Adjustments to Instrument Flight Procedures. During negotiations with proponents or when requested by Air Traffic, AJW-3, or AFS, FPO specialists should provide what procedure adjustments can be made to mitigate the effect without adversely affecting the procedure. Additionally, coordination with the RFSD-AWOPM is required when procedural adjustments are considered for the purpose of mitigating adverse effect on instrument departure procedures and intermediate, final, and missed approach segments of instrument approach procedures. The NFPO must not amend a procedure until receipt of the "Actual Notice of Construction," or other notification relative to an obstacle that will have a procedural effect. If, during a procedural review or while on a site visit, it becomes obvious for safety reasons that the existence of a previously unknown obstacle requires procedure minimums to be increased, expedite accomplishment of the change by means of a NOTAM.

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

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

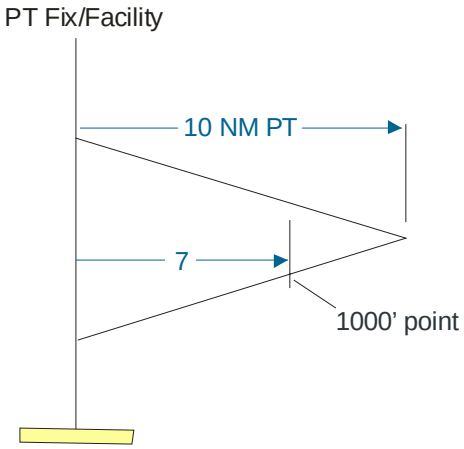
503. OBSTRUCTIONS UNDER SUBPART C, 14 CFR PART 77.

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

(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.

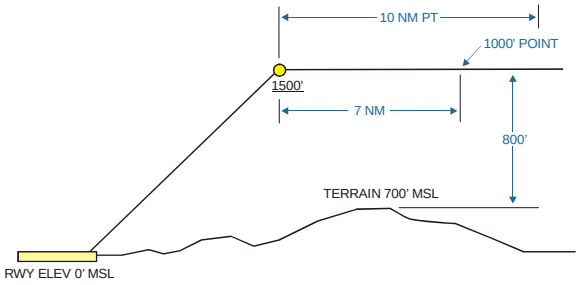
Figure 5-4a.



(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.



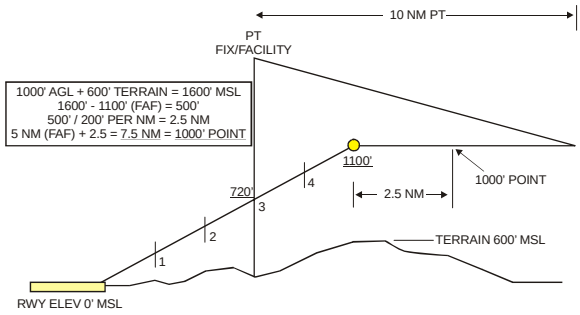
2 When the SIAP specifies a minimum altitude at the FAF less than 1,000 ft above the highest terrain in the final segment, BUT greater than 1,000 ft above the highest terrain in the intermediate segment, establish the 1,000-ft point at the FAF.

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:

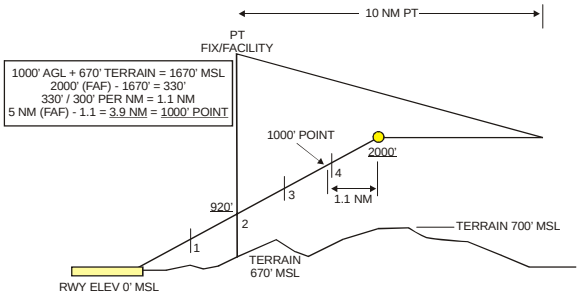
1 Where the SIAP specifies a minimum altitude at the FAF less than 1,000 ft above the highest terrain in the intermediate segment, the 1,000-ft point is assumed to be outside the FAF on the PT inbound leg at a distance determined by application of a 200 ft/NM descent to the FAF [see figure 5-6].

Figure 5-6.



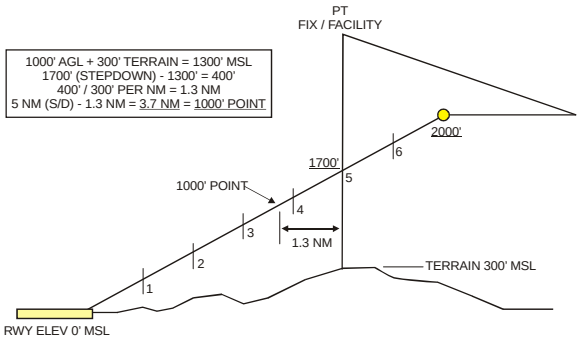
2 Where the SIAP specifies a minimum altitude at the final stepdown fix less than 1,000 ft above the highest terrain in the final segment, while specifying a minimum altitude at the FAF greater than 1,000 ft above the highest terrain in the intermediate segment, the 1,000-ft point is assumed to be inbound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

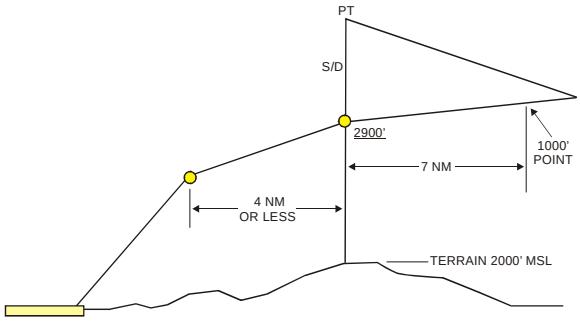


(d) Procedure Turn Over Stepdown PRIOR to the FAF:

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

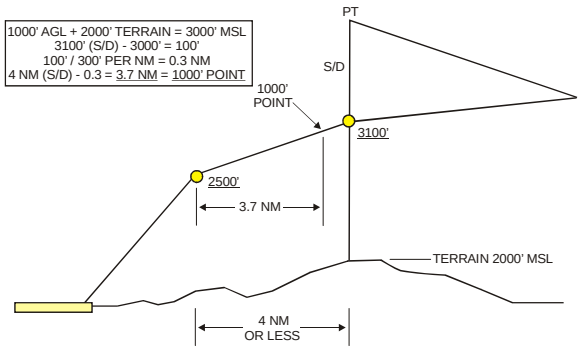
1 If the PT **completion altitude** is equal to or greater than, BUT the minimum **altitude at the stepdown fix/facility** is less than 1,000 ft above the highest terrain in the segment underlying the course reversal, the 1,000-ft point is assumed to be 7 miles from the stepdown fix/facility on the PT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

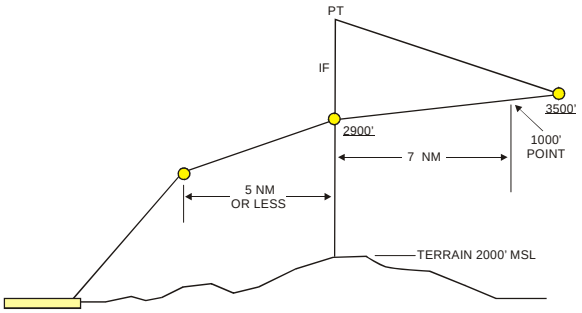
Note: Where the distance between the stepdown fix/facility and the FAF equals 5 NM, either Order 8260.3B, Volume 1, paragraph 244d or 244e may be applied; use the appropriate guidance above or below accordingly.

(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.

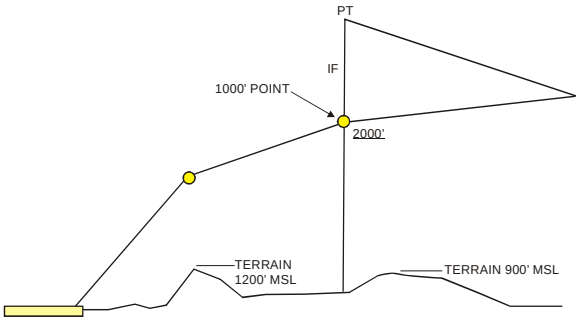
2 If the PT completion altitude is greater than or equal to 1,000 ft above the highest terrain in the segment underlying the course reversal, the 1,000-ft point is assumed to be 7 NM from the PT fix/facility on the PT inbound leg [see figure 5-11].

Figure 5-11.



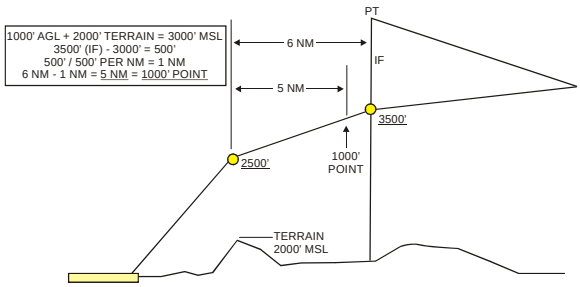
3 If the minimum **altitude at the IF** is greater than 1,000 ft above the highest terrain in the segment underlying the course reversal, BUT less than or equal to 1,000 ft above the highest terrain in the intermediate segment, the 1,000-ft point is at the IF [see figure 5-12].

Figure 5-12.



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

Figure 5-13.



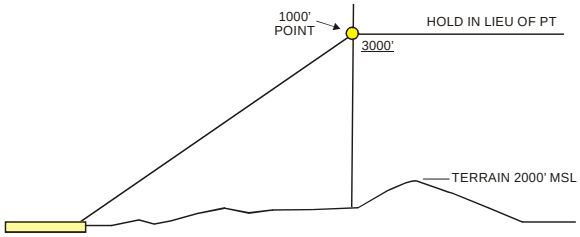
5 If the **1,000-ft point is inside the FAF,** apply methodology in paragraph 507c(2)(a).

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

(a) At the FAF:

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

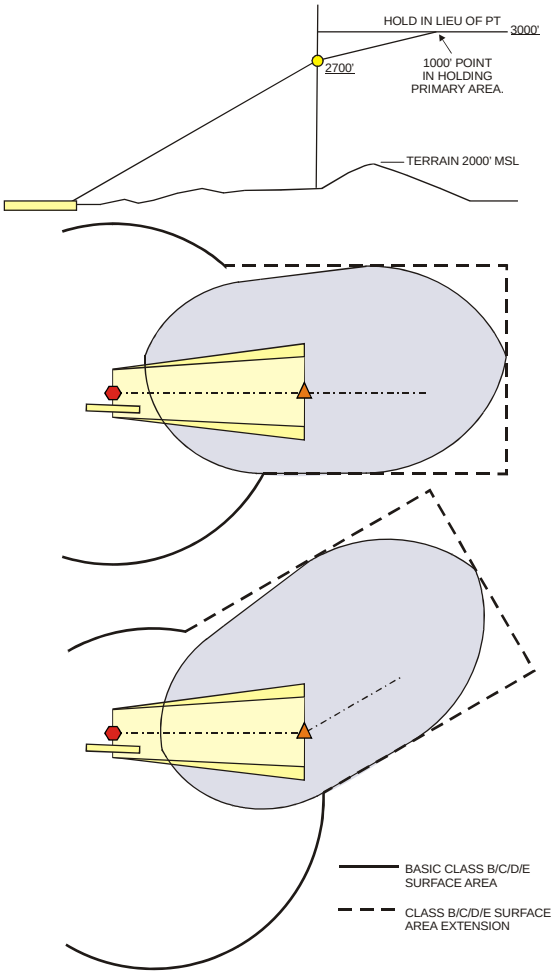
Figure 5-14.



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

3 If the **minimum hold-in-lieu-of-PT altitude** is equal to or greater than, BUT the minimum altitude at the FAF is less than 1,000 ft above the highest terrain underlying the course reversal, the 1,000-ft point is assumed to be in the holding pattern area. The Class B/C/D/E Surface Area extension must encompass the entire holding pattern primary area [see figure 5-15].

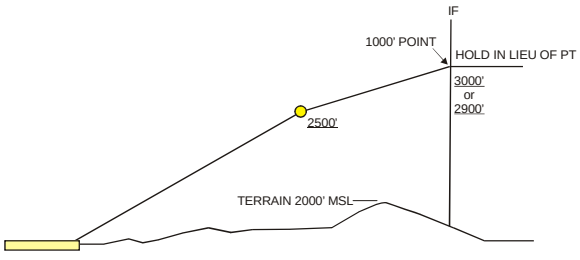
Figure 5-15.



(b) At the IF.

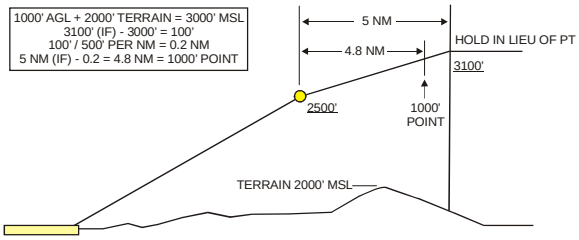
1 If the minimum altitude at the IF is less than or equal to 1,000 ft above the highest terrain in the intermediate segment, the 1,000-ft point is at the IF [see figure 5-16].

Figure 5-16.



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

Figure 5-17.



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

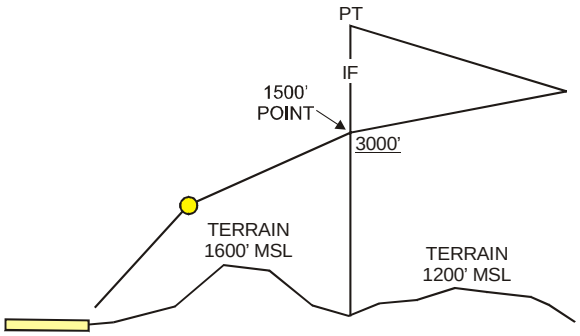
(5) General. For PT distances greater than 10 NM (out to 15 NM maximum), increase the distance to the assumed 1,000-ft point 1 NM for each mile in excess of 10 NM.

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

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

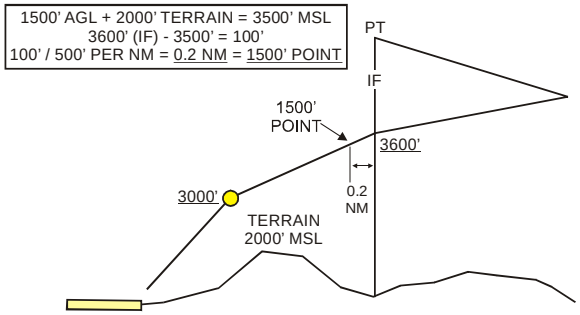
(a) Refer to Figure 5-18. If the aircraft reaches 1,000 ft AGL at point A, the width of the surface area at point A is the same as the measured width of the procedure trapezoid at this point. Apply the provisions of paragraph 507c(1) to determine the distance from the threshold to the 1,000-ft point;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

Figure 5-34.



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.

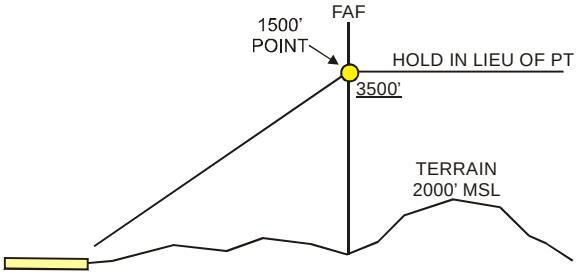
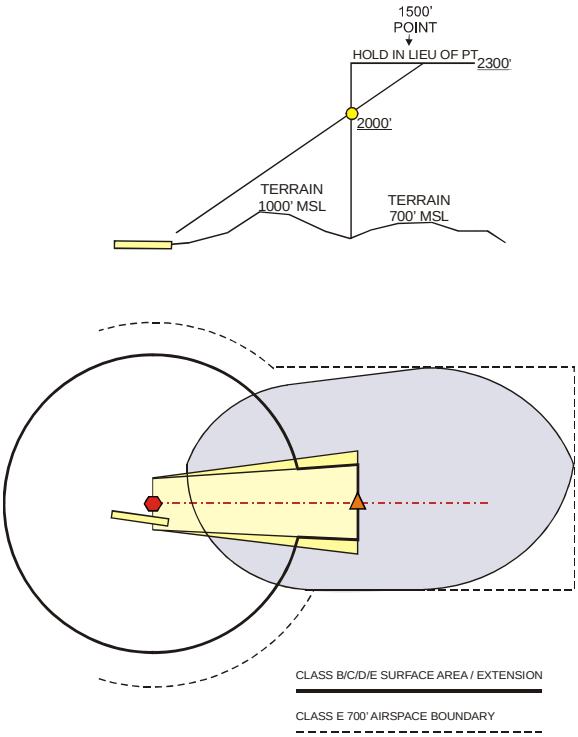


Figure 5-37.



(b) At the IF.

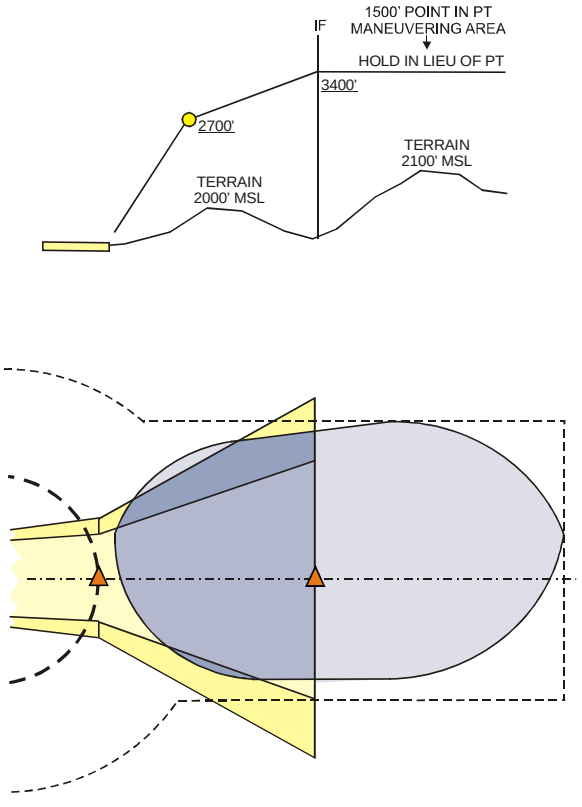
1 If the minimum **altitude at the IF** equals 1,500 ft above the highest terrain

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)].

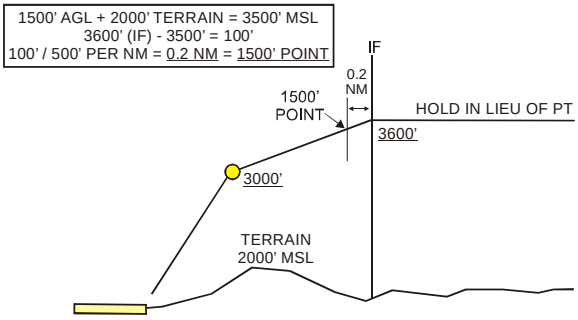
Note: In this case, controlled airspace requirements can be minimized by increasing the hold-in-lieu of PT minimum altitude to greater than or equal to 1500 feet above the highest terrain underlying the holding pattern area; apply paragraph 507e(3)(b) 1 or2 as appropriate.

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.

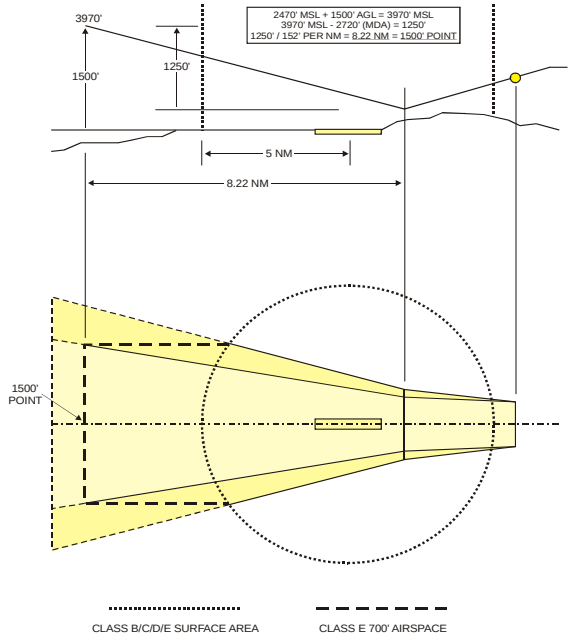


f. Missed Approach. Normally, it can be expected that the airspace required to encompass the IAPs or DPs at an airport will be sufficient to encompass that airspace required for missed approach procedures. This particularly applies to any need for Class B/C/D/E Surface Area extensions. Determine required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

Note: In this case, controlled airspace requirements can be minimized by increasing the penetration completion turn altitude to greater than or equal to 1500 feet above the highest terrain underlying the penetration turn area; apply paragraph 507g(2)(b) or (c) as appropriate.

(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).

(2) 1,500-Ft Point:

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

Note: In this case, controlled airspace can be minimized by increasing the penetration completion turn altitude to greater than or equal to the turn completion point and the IF; apply paragraph 507h(2)(b) or (c) as appropriate.

(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: Include the following information to be forwarded to ATC in a standard letter from the NFPO to the appropriate Air Traffic Service Area (or backside of the 8260-9 if applicable). The airspace requirements stated in this chapter are detailed. An Airspace Section may be added to the report version of the 8260-9 form in order to separate the ATC Airspace Information from other remarks. See also paragraphs 506c and 860c(5).

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

(2) FAF or IF Coordinates. List FAF and IF coordinates and any other pertinent fix coordinates (RF or TF fixes to include direction CW or CCW and center-point fixes if applicable) for segments with turns or multiple segments. List fix coordinates which aid in describing the final and intermediate areas, etc, which are not considered straight.

Example:
FAF: TEXET 323323.33N-1024354.23W

TEXET 323323.33N-1024354.23W 9.22 NM CW from TZRFT 323326.22N/1024352.33W

IF: POBOY 323422.12N-1024356.44W

(3) List distance from ARP (for circling only), list distance from runway threshold (for straight-in), or list distance from a named fix to 1000' point for procedures with multiple turning segments. If RF turns are used in a segment where the 1000' point is located, provide a depiction of the segments prior to include the named fixes and coordinates of the fixes along the route, include the calculated distance from a fix to the 1000' point. If multiple occurrences appear within a procedure, list the distance from a fix to the first 1000' point occurrence separately (first point a pilot encounters 1000' above terrain on the procedure). For example: If EDCBA IAF to the beginning of the IF segment has the 1000' point in the Initial Segment and ZYXWV IAF has the 1000' point in the Initial also, list both 1000' points. If the 1000' point is in the common Intermediate Segment or Final Segment, list only once.

(4) Width of the segment primary area at the widest point between the Class B/C/D/E Surface Area and the 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]. For segments containing RF turns, document the width of the segment primary area and describe the points (lat/long) where a line perpendicular to the centerline at the 1000-ft point corresponds with the width of the primary area. For segments with more than one RF turn, or complex turning areas, attach a simple depiction of the area showing the 1000-ft point and highlight/display the required airspace.

(5) True course (to the hundredth of a degree) of the segment in which the 1,000-ft point is located. When RF turns are contained within a segment where the 1000-ft point is located, leave blank and add description of the segment (fix name and coordinates of the RF center point and radius as listed in paragraph 507k(2) examples).

(6) List Distance from ARP (for circling-only), list distance from runway threshold (for straight-in), or list distance from the named fix to the 1,500-ft point for procedures with multiple turning segments. If applicable, state: **"1,500-ft point located in the PT maneuvering area;"** or **"1,500-ft point located in holding pattern area;"** or **"1,500-ft point located in (name of start fix) Intermediate Segment" or "1500-ft point is located in (name) Feeder Segment**." (The applicable Air Traffic Service Area will then establish the transition area in accordance with Order 7400.2). If 1500-ft point is located in an Initial or Feeder Segment and additional airspace is needed, describe the fixes (lat/longs of start/end fixes as in paragraph 507k(2) examples). If RF turns are used in a segment where the 1500' point is located, provide a depiction of the segment(s) which define the start of the segment. Include the named fixes and coordinates of the fixes along the route; include the calculated Distance from the FAF, IF, IAF or Fix to the 1500' point. If multiple occurrences appear within a procedure, list the distance from a fix to the first 1500' point occurrence separately (first point a pilot encounters 1500' above terrain on the procedure). For example: If EDCBA IAF to the beginning of the IF segment has the 1500' point in the Initial Segment and ZYXWV IAF has the 1500' point in the Initial also, list both 1500' points. If the 1500' point is in the common Intermediate Segment or Final Segment, list only once.

(7) Width of the segment primary area at the widest point between the Class E 700-ft airspace (transition area) and the 1,500-ft point; and the highest terrain elevation in the segment containing the 1,500-ft point [see paragraph 507e]. For segments containing RF turns, document the width of the segment primary area and describe the points (lat/long) where a line perpendicular to the centerline at the 1500-ft point corresponds with the width of the primary area. For segments with more than

one RF turn, or complex turning areas, attach a graphic depiction of the area showing the 1500-ft point and highlight/display the required airspace.

(8) True course (to the hundredth of a degree) of the segment in which the 1,500-ft point is located. When RF turns are contained within a segment where the 1500-ft point is located, leave off true course and add a description (fix name and coordinates of RF center point and radius, as listed in 507 k (2) examples) of the segment.

(9) Highest terrain elevation in the each segment containing the 1000-ft and 1500-ft point(s), if necessary. If the highest documented terrain falls within the PT (including entry zone) or hold in lieu of PT, include the appropriate pattern size. Include holding pattern size.

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

(11) For Terminal Arrival Area (TAA) application, the NFPO should, when necessary, provide the appropriate Air Traffic Service Area with information describing the TAA boundaries so that an appropriately sized radius from the ARP can be established to contain the TAA. If not known at that time, provide the information to the appropriate Air Traffic Service Area when it is available. The appropriate Air Traffic Service Area is allowed to establish whatever radius from the ARP is necessary to contain the TAA. Along with the standard information provided from Para 507k to the appropriate Air Traffic Service Area, provide the TAA boundary radii values and the radii center points in terms of fix names and coordinates with a description of the respective areas. Include a simple drawing to help the appropriate Air Traffic Service Area in visualizing the TAA airspace requirements.

l. SIAP Adjustment. Where the SIAP will not be derogated, consideration should be given to adjusting altitudes whereby the designation of unnecessary controlled airspace can be eliminated. The adjustment of altitudes should not be made where the descent gradients are increased above optimum.

m. Review. The NFPO must review airspace dockets to determine that the proposed airspace encompasses the appropriate portions of the IAP consistent with the data forwarded in accordance with paragraph 507k.

SECTION 3. AIRPORT AIRSPACE ANALYSIS

508. GENERAL.

a. Public Law 103-272, Sections 40103b.1 and 44502, contain the basic authority for the FAA to conduct airport airspace analysis studies, which culminate in an FAA determination. In order for the FAA to fulfill its obligations pursuant to the Public Law, Part 157, Notice of Construction, Alteration, Activation and De-activation of Airports, was promulgated. This regulation requires proponents of the civil airport projects not involving federal funds to give the Administrator reasonable prior notice of such proposals so that he/she may be advised as to the effects the proposal will have upon the safe and efficient use of airspace by aircraft.

b. Other airport projects which are subject to airport airspace analysis studies include those eligible for airport improvement programs which are submitted to the FAA pursuant to Order 5100.38A, *Airport Improvement Program (AIP) Handbook*; the Military Construction Program (MCP), submitted to the FAA for review pursuant to Public Law, and Department of Defense Directive 5030.17; the designation of instrument landing runways normally associated with airports under AIP agreements; changes in airport operating status from VFR to IFR; and changes to airport traffic patterns.

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

509. NFPO/AFS INPUTS IN ESTABLISHMENT OF AIRPORTS AND HELIPORTS.

Since the term "airports" includes small isolated airports (including ultra light flight parks), heliports, seaplane bases, and large airports, the problems associated with proposed establishment of airports are varied. However, it may be stated that the NFPO and AFS studies of all proposed airports or heliports relate mainly to the safety aspects involved, the feasibility of proposed anticipated operations, and the practicality of establishing reasonable instrument approach and VFR flight procedures, where required. Any proposed nonstandard installation or facility must be thoroughly reviewed to determine if an adequate level of safety can be achieved.

AFS performs the flight safety review of airport proposals to determine whether aircraft operations can be conducted safely considering the proposal's effect on the safety of persons and property on the ground. When requested by the Airports Division, AFS provides an operational safety review for Airports Division approval of a modification of an airport standard. AFS determinations, including studies referred by the NFPO, will be provided to the OPR.

AJW-3 is responsible for evaluation and comment on all airport proposals related to IFR impact. Routine coordination with the AFS point of contact is expected on joint studies.

a. Questions to be considered in the NFPO/AFS Analysis. It is not intended that the study be confined to these questions. It is recognized that some proposals will present unique problems that cannot be anticipated. Rather, the questions are outlined here to stimulate thinking (some of them are not applicable to all proposals):

(1) Where is the closest landing area? Is it depicted on aeronautical charts?

(2) What type of activity is contemplated for the proposed landing area? Will a conflict with established instrument approach procedures result? With other airports?

(3) Will existing obstructions result in unrealistic minimums? Unrealistic effective runway lengths? Will existing or proposed man-made and/or natural objects in the vicinity of the airport affect the safety of flight operations?

(4) What is the proximity of the closest city or town? Are runways aligned to avoid populated areas, schools, hospitals, and to minimize noise complaints? Other airports in close proximity?

(5) Are runways aligned in consonance with wind rose data? Is instrument runway aligned with IFR wind rose data?

b. Heliport Establishment. All proposals for the establishment of heliports must be given an on-site operational evaluation as specified in Order 8900.1, Volume 8, chapter 3, section 3. Proposed heliports to be located in congested areas, or any rooftop heliport, should be evaluated by helicopter qualified operations inspectors, or a qualified Procedure Evaluation Pilot (PEP).

c. Study Requirements. It must be recognized that some proposals will be acceptable from an airspace utilization point of view, but may be totally unacceptable from an operational safety standpoint. It is, therefore, important that a thorough study be performed and that the NFPO and AFS positions are developed and forwarded to the appropriate Airports division/branch. A copy of this position should be forwarded to the other appropriate division or branch. This position should clearly state any operational limitations and restrictions that would be required, e.g., ingress/egress routes.

510. ALTERATIONS OF AIRPORTS OR HELIPORTS.

For the purpose of this order, "alteration" means realignment, activation, or deactivation of any runway layout, and/or associated taxiways, or any other substantial change to the surface of that part of an airport that is used or intended to be used for aircraft landing and taking off. Generally speaking, the contents of the previous paragraphs of this section are also applicable to proposed alterations. However, there is the additional consideration of effects on existing instrument approach procedures previously established for the airport. There is also the possibility of the need for relocation of associated navigation facilities.

511. DEACTIVATION OF AIRPORTS OR HELIPORTS.

For the purpose of this order, "deactivation" means the discontinuance of use of an airport or landing area permanently, or for a temporary period of one year or more. The FAA requires notice of deactivation of airports. However, the NFPO and AFS have no authority to recommend approval or disapproval of such actions. It may be necessary in some cases to cancel approach procedures, or to recommend the relocation of previously associated airspace. Appropriate NOTAMs should, if required, be published and the closed airports should be marked in accordance with existing standards.

512. ASSISTANCE IN ZONING PROBLEMS.

It is FAA policy to advocate state and local legislation in the field of airport zoning in accordance with model acts prepared in cooperation with other National agencies, such as the Council of State Governments, the National Association of State Aviation Officials, and the National Institute of Municipal Law Offices. From time to time, the NFPO or AFS personnel may receive requests for assistance in the development of airport zoning acts (state) or ordinances (local). Such inquiries should be referred to airports personnel, and in the field to the appropriate airport engineer. Airports personnel are well versed with the model legislation that has been developed, and have been instructed in the dissemination of the material contained therein.

SECTION 4. RESERVED

513.- 516. RESERVED.

SECTION 5. RESTRICTED AREAS

517. GENERAL.

a. A restricted area is airspace designated under Part 73 within which the flight of aircraft, while not wholly prohibited, is subject to restriction. No person may operate an aircraft within a restricted area between the designated altitudes and during the time of designation without the permission of the using or controlling agency.

b. Obstacle Clearance. Areas which contain restricted entry (e.g., Restricted areas, Prohibited Areas, etc.) are not considered obstacles to the establishment of instrument flight procedures. However, obstacle clearance must be provided over terrain and/or manmade obstacles within the restricted area, that underlies the flight procedure clearance area. The lateral and vertical boundary of the restricted area must be used to define the obstacle location when tethered balloons are within.

518. LETTER OF PROCEDURES.

A letter of procedure between the using agency of a joint-use restricted area and the ATC facility (controlling agency) may be promulgated to allow non-participating aircraft to transit the restricted area when the area is not being used for its designated purpose.

519. RESERVED.

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

520. CRITERIA AND GUIDELINES.

The criteria and guidelines for the establishment, relocation, or discontinuance of navigational aids affecting airspace are contained in Order 7031.2, *Airway Planning Standard Number One Terminal Air Navigation Facilities and ATC Services*.

521. NFPO ACTION.

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

522. AFS ACTION.

Conduct studies to determine the effect of the proposed action on operational safety as relates to existing or proposed visual flight operations. AFS will provide input to the appropriate Air Traffic Service Area relating to operational impact, and to other interested divisions on request.

523.-599. RESERVED.

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 V244 Westbound, V230 Southwest bound."

When an IAF is over a facility:
"Chart planview note: Procedure NA for arrival on ABC VORTAC airway radials 233 CW 338."

When an IAF is over a fix on an airway:
"Chart planview note: Procedure NA for arrivals at RUDVE on V140 Westbound, and arrivals at MCJEF on V140 Eastbound."

(3) Initial Approach segments based on straight courses. All initial approach segments that meet criteria for angle of intercept between the initial and intermediate segments, 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**

procedures, describe a fix by name only. NACO will chart fixes under what is known as the "hierarchy concept." This means if no NAVAID or ground-based fix exists, the point will be charted as a waypoint. Except for RNAV procedures, when a fix is included in the missed approach instructions, use a full description of a fix appropriate to its use in the missed approach procedure.

Example: (Fix name: MORIS LOM/INT/7.00 DME) "**CLIMB TO 3600 DIRECT MORIS LOM/INT/7.00 DME AND HOLD."**

Example: (Fix name: DAVEE INT/16.00 DME) **"CLIMB TO 3600, THEN CLIMBING RIGHT TURN TO 4000 on ABC VORTAC R-180 TO DAVEE INT/16.00 DME AND HOLD."**

RNAV Example: "**Climb to 2000 direct DAKEY and hold."**

e. When no fix overlies an LOM, the identifier or the 5-letter name may be used: **AB LOM** or **ABBAH LOM.**

f. An alternate method of identifying an LOM, such as an **INT** or **DME**, is often helpful in ILS or LOC SIAPs but an INT is not appropriate in NDB SIAPs.

g. ATD References. Include ATD fix values with respect to the MAP on all named and unnamed (VDP) fixes within a RNAV final approach segment [see paragraph 857r for VDP application].

Example:

MAP at LTP: "**IDEDE/3.50 NM TO RW16**"
MAP not at LTP: "**BARBB/3.50 NM TO CORDL**"

h. RNAV must not have a hold-in-lieu-of-PT (course reversal) or missed approach holding established at the final approach fix (FAF).

807.-809. RESERVED.

SECTION 3. CERTIFICATION, PROCESSING, AND REVIEW

810. GENERAL.

Certifying, processing, and reviewing instrument approach procedures must be accomplished as outlined in this section.

811. CERTIFICATION AND DISTRIBUTION OF SIAPs.

Certification of instrument approach procedures must be accomplished on the reverse side of the appropriate 8260-series form. Instructions for completion of the entries are as follows:

a. All Affected Procedures Reviewed. Enter **"X"** in the appropriate space. A "Yes" indicates that all requirements for a periodic review have been accomplished. A "No" indicates that only the items listed in the "Changes" block were reviewed [see paragraphs 241a(2) and 813c].

b. Coordinates of Facilities. When a facility is referred to on a procedure for the first time, enter the facility coordinates. The source data for the coordinates must be identified; e.g., **AF survey, ALP, OC, Map Study, AJW-3, NOS, etc.** If sufficient space is not available to list coordinates of all new facilities, the space under "Changes" must be used. Leave **blank** for RNAV procedures.

c. Required Effective Date. The effective date must be either "Routine," "Proposed," "Concurrent," or "Hard." See Order 8260.46 for guidance regarding effective date entries for departure procedures.

(1) Routine Dates. If a specific effective date is not required, enter the word "**ROUTINE."**

(2) Proposed Dates. Proposed dates may be used for any SIAP, **provided the procedure does not require any en route charting changes.** This includes SIAP originals, amendments, and cancellations. Proposed dates must not be used for departure procedures or STARs. Enter a proposed date as: "P12/08/02." If proposed SIAPs are rescinded, NFDC must be notified to take appropriate action in the Transmittal Letter (TL).

(3) Concurrent Dates. If the SIAP is part of a large package and/or publication is to be concurrent with another event, as when it is associated with an airspace case, enter the word "**CONCURRENT.**" Use the following standard Note in the lower part of the REASONS block: **"Effective concurrent with KOKC ILS RWY 17R Amdt 8,"** or **"Effective concurrent with Airspace Docket 02-AGL-29."**

(4) Hard Dates. When a specific effective date is required; e.g., facility Mag Var rotation, enter a hard date as **"12/08/02."** Hard dates require updating the NFDC database 56 days in advance of charting. Hard dates are not to be used as an "easy to use" option. Where a hard date is required for reasons other than a magnetic variation change, request a deviation from policy as detailed below.

(5) Deviations. Deviations from the previous guidelines require agreement between the NFPO, NACO, and NFDC [see Order 8260.26]. AFS-420 must be informed of all coordinated deviations.

d. Coordinated With. Coordinate all original processing and revisions to instrument approach and departure procedures with appropriate civil aviation organizations, the appropriate ATC facilities, and the airport owner or sponsor. Coordinate with appropriate FSDO offices according to the type of operations conducted at the airport. Coordinate with other interested organizations as necessary. A copy of the graphic sketch required by paragraph 860e must be included in all procedure packages that are submitted for coordination. Coordinate procedures with ATA if the airport is served by scheduled air carriers. Coordinate all Part 97 SIAPs and all DPs with ALPA. Coordinate with Allied Pilots Association (APA) for procedures at airports used by American Airlines. Coordinate helicopter procedures with Helicopter Association International (HAI).

This coordination action is required to provide advance notice to the user organizations that a change to Part 97 is being initiated. These instrument procedures will be posted on NFPO web site at: http://www.webavn.jccbi.gov/acifp.asp. Civil aviation organizations that are requested to coordinate on these procedures will receive an E-mail alerting them of the procedure posting. Those receiving this notification then have 20 working days in which to review the procedures and respond to the indicated actions during the period that the procedure is being processed. Any substantive adverse user comments during this period permit sufficient time to amend or withdraw the paperwork prior to publication. Evaluation and disposition of user comments are the responsibility of the NFPO; and all comments must be considered before the procedure is forwarded for publication. Valid user comments, which cannot be reasonably accommodated by the NFPO, should be referred to AFS-420 for resolution prior to submission of the procedure for publication [see also paragraph 421].

(1) Enter "X" in the appropriate aviation organization spaces.

(2) Designate additional organizations or offices if additional coordination is to be accomplished.

e. Flight Checked By. Enter the name of the airspace system inspection pilot (ASIP) who conducted the flight inspection and date flight inspection completed. The flight inspection procedures control form must be maintained with the procedure package. The 8260-series forms supporting IFPs require the signature of the flight inspection pilot or other authorized AJW-3 designated representative signifying flight inspection completion. If a flight inspection is NOT required, enter **"Flight inspection not required"** and the **name, title, and signature of the AJW-33 official** who makes that determination. Include the date of the most recent flight inspection of the SIAP. Use the word **"pending"** only if the procedure is submitted prior to flight check under Order 8260.26, *Establishing and Scheduling Instrument Approach Procedures Effective Dates*, or if publication is required on a specific charting cycle date. An entry in this block indicates the procedure:

(1) Was flight checked in accordance with applicable directives and standards. "Proposed" procedures forwarded under Order 8260.26, will be flight checked at a later date.

(2) Is approved for further processing and publication.

f. Submitted By. Enter the name, signature, company name, and date authorized by the non-governmental entity that designed the procedure. This block is only found on the Form 8260-7.

g. Developed By. Enter the name, branch, signature of the person responsible for developing the IFP, and the date developed. Authority to sign in this block is assigned to the NFPO personnel certificated by AJW-3 as a procedure development specialist. The signature in this block certifies that:

(1) The developer used the most current and accurate data in developing the SIAP.

(2) The procedure was developed in accordance with appropriate policies, directives, standards, and criteria [see special instructions for Form 8260-7 in paragraph 872].

h. Approved By. Enter the name and signature of the NFPO Manager, or his/her designated representative, and the date signed. Signature in this block certifies that the procedure:

(1) Conforms to procedures development policies, standards, and criteria.

(2) Is approved for further processing and publication.

i. Changes and Reasons. The purpose of these entries is to keep charting agencies and

coordinating offices advised of major procedural changes. The listing of changes should include all revisions (except clerical) and the reasons should contain sufficient details so that the cause for the procedural amendment will be clear to the reviewing offices. Form 8260-7 does not contain these blocks; therefore, this information must be documented on a Form 8260-10, Continuation Sheet.

812. CANCELLATION OF INSTRUMENT APPROACH PROCEDURES.

Cancellation of instrument approach procedures must be accomplished on the same form number as required for documentation of the SIAP. All items on the front side of the forms must be left blank, except type of procedure and the CITY, STATE line. This line must duplicate the currently effective SIAP. The following notation must be typed in the NOTES section: "**Procedure canceled effective _____.**" (NFDC will fill in the date). On the reverse side of the form, complete the "Coordinated with," "Developed by," and the "Approved by" blocks. If applicable, enter in the lower portion of the REASONS block: "**Concurrent with VOR RWY 18, Original.**"

813. MINOR REVISIONS TO SIAPs.

Minor changes to instrument approach procedures may be made by an abbreviated 8260-series form amendment. A T-NOTAM must be used to be followed by an abbreviated 8260-series form amendment. When processing an abbreviated 8260-series form, apply the following:

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

b. Update the 8260-series form to reflect all previous P-NOTAM amendments not yet incorporated on the form.

c. A complete review of the procedure is not required; therefore, check "No" in the "All Affected Procedures Reviewed" box of the form.

d. Complete the "Changes" and "Reasons" blocks of the form indicating the changes in the T-NOTAM as well as those of previous P-NOTAMs incorporated. Include cancellation of the T-NOTAM. Be specific in indicating the changes, e.g., 'MDA changed from 820 to 880,' and the reason, e.g., 'New obstacle found in final segment.'

e. Enter "Routine" as the required effective date.

f. Coordinate changes with appropriate organizations, as necessary.

814. PROCESSING.

When the NFPO quality review is completed, the procedure must be forwarded directly to NFDC and NACO for publication. Distribution must be in accordance with table 8-1. Additionally, forward a copy to users specified in paragraph 811d. [Refer to paragraph 872d for Special procedure distribution channels].

815. NFPO REVIEW OF SIAPs AND CHARTS.

The NFPO must review and check Forms 8260-3/4/5/10, and the associated aeronautical charts published by NACO for variations from information submitted for publication. If any variance or charting discrepancies are identified, see paragraph 223 for action to be taken.

816. NFPO ACTION.

a. Forms Routing. Table 8-1 provides easy routing reference for NFPO forms processing. Specific directive references are included for further guidance.

b. The NFPO must process Army forms as required by Order 8260.15, *U.S. Army Terminal Instrument Procedures Service*.

c. The NFPO must process U.S. Air Force procedures using FAA forms as required by Order 8260.32, *U.S. Air Force terminal Instrument Procedures Service*.

SECTION 5. FLIGHT PROCEDURES STANDARDS WAIVER, FAA FORM 8260-1

830. PREPARATION OF FAA FORM 8260-1, FLIGHT PROCEDURES STANDARDS WAIVER.

All waivers to Order 8260.3, *U.S. Standard for Terminal Instrument Procedures (TERPS)*, and other TERPS related FAA directives, must be initiated by the developer, and forwarded to the Flight Technologies and Procedures Division, AFS-400, through the Flight Procedure Implementation and Oversight Branch, AFS-460. See figures 8-1 and 8-2 for sample Form 8260-1. Itemized instructions for completing Form 8260-1 are as follows:

a. Control Number: Flight Standards will enter a control number that will be used for tracking.

b. Item 1: Flight Procedure Identification. Enter the city and state, official airport name, and the flight procedure identification (excluding amendment number).

c. Item 2: Waiver Required and Applicable Standard. Identify clearly and accurately what standard is requested to be waived; e.g., **"Missed Approach Section 1 is not aligned with the Final Approach course. Order 8260.3B, Volume 3, paragraph 3.9.1."** Request only ONE waiver of standards on each form, and address the applicable standard(s) to be waived (NOTE: More than one reference may be applicable to what is being waived). When a procedure is amended, reprocessing of an existing waiver is not necessary unless the amendment directly impacts the basis for the waiver.

d. Item 3: Reason for Waiver. The reason for the waiver must be clear and concise. If the waiver for an existing procedure is being revised, the effective date of the original procedure must be included. Include full justification for the waiver; e.g., **"To avoid obstructions that would require raising the DA 180 ft."**

e. Item 4: Equivalent Level of Safety Provided. Complete this item in all cases with as many points as is germane to the equivalent level of safety. Clearly state the equivalent level of safety.

Note 1: The fact that the procedure has existed for a number of years or that the procedure conforms to CFRs is not considered to be sole justification for an equivalent level of safety.

Note 2: Satisfactory flight inspection in and of itself does not constitute an equivalent level of safety.

f. Item 5: How Relocation or Additional Facilities will Affect Waiver Requirement. Enter statements in this item to indicate consideration has been given to relocation, programming, or reprogramming action to negate the requirement of a waiver of standards. Insertion of NA (not applicable) in this item leaves a question as to whether any consideration has been given to this item.

g. Item 6: Coordination with User Organizations. Indicate the FAA offices and other organizations with which this waiver will be coordinated.

h. Item 7: Submitted By. The NFPO Manager or his/her designated representative, must sign and date all waiver requests, and forward to AFS-460 for further action. The waiver package submitted to AFS-460 must include such technical data (sketches, maps, computations, supporting database information, documentation) as necessary for Flight Standards analysis and understanding of the situation. Packages submitted with insufficient supporting technical data are subject to return to the originating office, or may be held pending receipt of such information.

i. Item 8: Continuation. The top of the second page is a continuation sheet for additional information for items 2 through 6 on the first page of the form.

j. Item 9: AFS Action.

(1) The Flight Procedure Implementation and Oversight Branch, AFS-460, processes all waiver requests and schedules a Procedure Review Board (PRB) to gain consensus on approval/disapproval. If waiver is approved, the results are forwarded to AFS-400 for endorsement. When necessary, Flight Standards will annotate the Form 8260-1 that approval is contingent upon a successful flight inspection report. Safety Risk Management (SRM) compliance for the Procedure Review Board (PRB) will be implemented as a Quality Management System (QMS) process and documented as part of the online PRB package. Acceptance of the residual risk is documented per PRB Safety Assessment action.

(2) AFS-400 indicates Washington Headquarters action, adds any appropriate comments, and returns the signed waiver package to AFS-460.

(3) AFS-460 retains the original for file, provides a copy of the completed waiver to the NFPO, and makes further distribution as necessary.

k. U.S. Army Waivers. The NFPO completes Form 8260-1 per the instructions provided in this order, as supplemented by Order 8260.15, *U.S. Army Technical Instrument Procedures Service*. U.S. Army procedures requiring waivers, for joint civil/military use, are sent to AFS-460 per the provisions in paragraph 830h.

l. Cancellation of a waiver may be initiated by the NFPO (see paragraph 285) or by AFS-400. The Initiating office must enter a signed statement to that effect, with the effective date and reason for cancellation. AFS-400 will distribute copies to the same organizations that received the approved waiver.

Example:

This waiver is canceled effective February 2, 2002.

TERPS Change 4 permits multiple DME fixes.

(Signature) _____

(Title, Office Symbol)_____

831.-839. RESERVED.

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

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 only when a compulsory reporting point is established, location/fix makeup is modified, or canceled. A docket number is not required when an existing fix, not a compulsory reporting point, is moved (see paragraph 264c) or amended due to other reasons.

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 effective date of the new/revised holding pattern and/or fix.

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 person that completed or reviewed the fix.

r. Approved By. Enter the date, office, name, and signature of the approving authority as determined by AFS-460. The NFPO has approval authority for approving fixes associated with FAA instrument procedures and/or airways. 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 when there is no PT, or where hold-in-lieu-of-PT or a teardrop course reversal maneuver is established.

b. Line 2.

(1) Where a SIAP requires a teardrop course reversal maneuver, enter the data in accordance with the following examples:

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 LP or LNAV only use, annotate it for LOC or LP/LNAV use as follows:

MIN ALT: CAROL 1600*
***LOC only**

MIN ALT: MIZZU 1260*
***LNAV only**

MIN ALT: TARAA 1340*
***LP 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 simultaneous 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 and track glidepath.

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 value is the TCH used, unless ARDH is approved (see paragraph 860c(6)). 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.* When it has been determined that a procedure qualifies for 1800 RVR under the guidelines in this Order, place in the Notes section of the 8260-series Form: **"Chart Note: RVR 1800 authorized with use of FD or AP or HUD to DA."** This chart note must be referenced to the straight in minima it applies to.

(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 Radio Altimeter (RA) and RVR established by TERPS criteria. At locations where ILS Category II procedures have been established, a separate Copter ILS Category II procedure may be developed that contains a HATh/HAT less than 200 ft but no lower than 100 ft above threshold elevation or touchdown zone elevation. These Copter ILS Category II procedures are separate and use the standard Copter (CAT I) ILS naming convention, are documented on a separate Form 8260-3, and may contain localizer minimums on the same chart. A RA height must also be provided for publication with the DA. For copter procedures, the DA and HATh/HAT will be entered in the minima boxes and the RA will be entered in the NOTES section adjacent to the Category II note. Enter these items as follows:

(1) ***"Category II ILS Special Aircrew and Aircraft Certification Required*** **S-ILS 32L: CAT A, B, C, D, RA 104, RVR 1200, HATh/HAT 100, DA 756 MSL" or** ***"Category II ILS Special Aircrew and Aircraft Certification Required*** **S-ILS 32L: CAT A, B, RA 104, RVR 1200, HATh/HAT 100, DA 756 MSL; CAT C, D, RA 124, RVR 1400, HATh/HAT 120, DA 776 MSL."**

Note: If a Category II procedure is developed under Order 8400.13, that is lacking ALSF and/or TDZ/CL lighting systems, enter the following in the NOTES section for publication on the approach chart:

"CAT II Chart Note: Reduced Lighting: Requires specific OPSPEC, MSPEC, or LOA Approval and use of Autoland or HUD to touchdown."

(2) ***"Copter ILS Category II - Special Aircrew and Aircraft Certification Required; RA 104."***

(3) ***"Category III ILS Special Aircrew and Aircraft Certification Required."*** **S-ILS-32L: CAT IIIa CAT A, B, C, D, RVR 700. CAT IIIb CAT A, B, C, D, RVR 600. CAT IIIc CAT A, B, C, D, RVR 300." or** ***"Category III ILS Special Aircrew and Aircraft Certification Required."*** **S-ILS-27L: CAT IIIa CAT A, B, C, D, RVR 700. CAT IIIb NA. CAT IIIc NA."**

l. Dual Minimums. Enter dual minimums, when authorized. Do not publish dual minimums unless a 60-ft operational advantage is obtained or a reduction in visibility can be achieved. To avoid proliferation of dual minimums, all IFR aircraft are assumed to have at least one VOR receiver. Dual minimums based on a stepdown fix combined with local and remote altimeter settings could result in four sets of minimums. When two remote sources are used, treat the source resulting in lower minimums as the "LOCAL" altimeter setting source in the following paragraphs. Document only two sets of minimums. The combinations authorized are minimums with and without a stepdown fix; or minimums with local and remote altimeter settings.

(1) When authorizing minimums with and without a stepdown fix and which also require local and remote altimeter settings enter the minimums with and without the stepdown fix based on the LOCAL altimeter in the two sets of minimums boxes. Address the minimums with and without the stepdown fix based on the REMOTE altimeter setting in a Note and include the applicable visibility increases. Establish the required visibility as stated in paragraph 404.

Note: Normally an airport with an ILS does not have a remote altimeter setting. But where this does occur, the MDA adjustment might not be suitable for DA adjustment; i.e., the adjustment might be too great, and the visibility adjustments might differ.

(a) Compare visibilities to determine Note format:

1 Where precision and nonprecision visibility adjustment is the same, enter the following in the NOTES section: **"Chart note: When local altimeter setting not received, use (location) altimeter setting and increase all DAs/MDAs 60 ft, and all visibilities 1/2 mile."** Use this Note also when visibility is affected in ALL categories; apply the greatest visibility increase.

2 Where precision and nonprecision visibility adjustments differ and visibility is affected in all categories, apply the greatest visibility increase to all categories and define application as follows in the NOTES section:

"Chart note: **When local altimeter setting not received, use (location) altimeter setting: increase DA to 287 ft and all visibilities 1/4 mile; increase all MDAs 60 ft and all visibilities 1/2 mile."**

3 Where precision and non-precision visibility adjustments differ and visibility is NOT affected in all categories, apply the greatest visibility increase only to those categories which are affected and define application as follows in the NOTES section: **"Chart note: When local altimeter setting not received, use (location) altimeter setting: increase DA to 287 ft and visibility CAT D 1/4 mile; Increase all MDAs 60 ft and visibility CATs C and D 1/2 mile."**

Note: CAT A is not affected until the HATh/HAT is more than 880 ft; CAT B is not affected until the HATh/HAT is more than 740 ft.

(2) When dual minimums are appropriate **with local and remote altimeter settings,** enter the title: **"(LOCATION) ALTIMETER SETTING MINIMUMS"** over the second set.

(a) When a procedure DOES contain a stepdown fix, but has only local or only remote altimeter setting minimums, enter the straight-in and circling minimums required **without** the stepdown fix in the first set of boxes. Enter the straight-in and circling minimums required **with** the stepdown fix in the second set of boxes.

(b) When a procedure does NOT contain a stepdown fix, but has both local and remote altimeter setting minimums, enter the local altimeter setting minimums in the first set of boxes and the remote altimeter setting minimums in the second set of boxes. Use the following Note: **"Chart note: When local altimeter setting not received, use (location) altimeter setting."**

Note: When the situation in paragraph 854l(1)(a)1 applies, a note is preferable to a second set of minimums.

(c) When a procedure does NOT contain a stepdown fix, but has two sets of part-time remote altimeter setting minimums, enter the lower minimums in the first set of boxes, and the higher minimums in the second.

(3) Stepdown fixes.

(a) On procedures where the course guidance and stepdown fix are obtained from **different VOR facilities,** publish two sets of minimums.

(b) On procedures where the course guidance and stepdown fix are obtained from **different NDB facilities,** publish two sets of minimums.

(c) Where paired DME is used and the procedure is NOT identified: ".../DME," use the fix name in the title: "**NIXON FIX MINIMUMS**."

(d) Where non-paired DME is used, as above, place an attention symbol (*) next to the title (e.g., **NIXON FIX MIMIMUMS***), and enter the following in Additional Flight Data: "***DME from XYZ VORTAC**."

(e) On procedures where the course guidance and the stepdown fix are obtained from facilities, which are of different types [except as noted in Order 8260.3, Volume 1, paragraph 288c(4)(c)], publish two sets of minimums. Use one of the following titles to identify the dual minimums:

1 On procedures where the fix is predicated on DME only: **"DME MINIMUMS."**

2 On procedures where a fan marker is used for the stepdown fix: **"FM MINIMUMS."**

3 On procedures where the stepdown fix is identified by radar only: **"RADAR MINIMUMS."**

Note: When radar fixes are specified, ATC must agree to provide the radar service on a continuous basis and the fix must be identified on the video map or map overlay.

(f) On procedures where course guidance and a stepdown fix use the same type of receiver, annotate in the minimums box that dual receivers are required; e.g., "AGNES FIX MINIMUMS (Dual VOR receivers required)" or "AGNES FIX MINIMUMS (Dual VOR receivers or DME required)."

m. Landing Minimums Limitations. Minimums are affected by a number of different circumstances and conditions. Examples are enumerated below indicating the appropriate action to be taken.

(1) Day and Night Minimums. The authorized minimums apply to both day and night conditions unless otherwise restricted. The NFPO must determine the operation of ALL lighting aids PRIOR to authorizing night minimums. Permanently installed **runway edge lights** (including threshold/runway end lights), defining the lateral and longitudinal boundaries of the runway, must be operating to support night minimums [see AC 150/5340-24]. Airport or runway boundary lights are NOT adequate for night landing minimums unless the entire area between such lighting is suitable for landing. In special cases, portable runway lights may be used temporarily as described in AC 150/5345-50.

(2) Restriction of Night Minimums. When night minimums are not authorized or are higher than day minimums, a restriction must be entered in the NOTES section to deny night minimums or to specify increased night minimums.

(a) If unable to authorize night minimums, use: **"Chart note: Procedure NA at night."** See also paragraph 854m(13).

(b) If increased night visibility is required by environmental conditions, such as extraneous lighting, use: **"Chart note: Night visibility minimum__miles."**

(c) When straight-in minimums are published to an unlighted runway, but another runway is lighted, use: **"Chart note: Straight-in minimums NA at night."**

(d) When only circling minimums are published and at least one runway is lighted, a note is not required for non-lighted runways. When no runways are lighted, use: **"Chart note: Procedure NA at night."**

(e) At an airport with multiple runways where straight-in minimums are authorized to a lighted runway, but the other runway(s) is/are unlighted, a note is not required for the unlighted runways.

(f) When only circling minimums are published and circling is not authorized at night, use**: "Chart note: Procedure NA at night."**

(g) When required by TERPS Volume 1, paragraph 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;"** or **"Chart note: Sidestep 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, in order to permit 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;"** or **"Chart note: When VGSI inop, sidestep to 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.

*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, LOC/DME, etc., procedure, **simultaneous reception** of both facilities must be assured. This requires a note indicating the DME location and the identification of both facilities: **"Chart note: DME from XYZ VORTAC. Simultaneous reception of I-ABC and XYZ DME required**." DME frequencies are not paired with NDBs; and DME antennas may or may not be collocated with the NDB. For NDB/DME SIAPs, use: **"Chart note: Simultaneous reception of ABC NDB and XYZ DME required."** See paragraphs 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 missed approach altitude. Use the following note: **"Chart planview note: Increase to 90 KIAS upon reaching the missed approach altitude."**

(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 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 on ABC R-180 to ABC VORTAC and hold."**

(2) When the missed approach point is also the missed approach holding fix and straight-ahead climb is not practical: **"Climbing right turn to 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 on 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 on heading 070 then direct ABC VOR and hold."**

Note: The word "immediate" is an emotion-laden word and should only be used when deemed absolutely necessary by the procedure designer and/or flight inspection pilot to enhance safety.

(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 on heading 070 and ABC R-167 to ABC VOR and hold."** Alternatively, a specific point (fix, waypoint, etc.) that will allow sufficient distance, at an assumed 200 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 on 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 on ABC R-111 then climbing right turn to 6,000 direct ABC VORTAC and hold (TACAN aircraft continue on ABC R-280 to CAROL 10 DME and hold W, LT, 100 inbound.)"**

(7) LOC courses are specified in compass points, and NDB courses as "courses to" or "bearings from:" **"Climb to 3,000 on I-ABC Localizer NE course (030) and course 350 to DEF NDB and hold."**

(8) When the missed approach requires no specific direction of turn: **"Climb to 7,000 on 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 course 098.32 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 on course 015 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 on course 270 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.

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, mandatory, or block 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 appropriate fix in the final approach segment, and the appropriate TCH: **NIXON to RW15: 3.26/55.** Where straight-in minimums are not authorized due to an excessive descent angle, enter the straight-in descent angle (may exceed maximum when compliant with circling descent angle). 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.**

y. DME Facility. When a DME is used and is not associated with the facility providing final course guidance and station passage occurs within the final segment, the facility must be shown in the profile view; e.g., **"Chart in profile view: I-XYZ DME antenna" or "Chart in profile view: ABC VOR/DME"**.

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 NAVAID providing final course guidance is relocated and the relocation changes the published final approach course.

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

(f) 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.

(g) Development or maintenance responsibility of a Special IAP is transferred [see paragraph 441b(10)].

(h) When a Special procedure is converted to a public, 14 CFR Part 97 procedure.

(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) Changes to 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. Every effort must be made to allow changes to be effective as soon as possible, but no later than one year after the receipt or as coordinated. This will ensure instrument procedure availability to the maximum extent possible, lessen impact on airport IFR operations, and ensure chart/database harmonization.

(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.

(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.

(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 angle; 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) or DA for precision/APV approaches in the "FROM" column. When a procedure contains multiple lines of minimums, list the MAP/DA associated with the lowest minimums first, followed by the MAP/DA associated with other lines of minimums. Enter the starting elevation of the missed approach surface(s) (HMAS) for each listed MAP and/or DA in the "ELEV" block. Separate HMAS values with a "/". Enter the clearance limit in the "TO" column. When more than two lines of minimums are present, or when the missed approach consists of more than one segment, then list each segment of the missed approach on separate lines within Block 1. For example, a missed approach in the form of "Climb to 2000, then climbing left turn to 3000 heading 260 and PWA-216 to JESKE and hold" consists of three segments which include (1) MAP to 2000 MSL, (2) 2000 MSL to PWA R-216, and (3) PWA R-216 to JESKE. Annotate segments common to all lines of minimums only once. Elaborate in REMARKS if necessary.

(b) Specify the clearance limit under the "to" column.

(c) When there are multiple controlling obstacles in the missed approach segment (e.g., to support a missed approach climb gradient), document this information in Block 1. Specify all controlling obstacles by type, coordinates, elevation and accuracy code. Document the controlling obstacles to include the obstacle requiring the highest climb gradient and the obstacle which controls the climb gradient termination altitude (if different). Document the highest obstacle (and adjustments) used to determine the preliminary missed approach altitude. For multiple segments, document the highest obstacle/adjustments in the primary area, or highest equivalent obstacle/adjustments in the secondary area, for each segment of the missed approach. Document the highest terrain within the primary area for each segment of the missed approach.

(d) Enter "ASC" in the "ROC" column when the 40:1 OCS surface is not penetrated. If it is penetrated and a non-standard climb gradient has been applied, enter "CG" followed by the OCS slope (e.g., "CG/32:1"). Enter the clearance limit altitude in the "MIN ALT" column. Enter any additional comments in 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).

Note: When applying the new circling criteria under Order 8260.3, Change 21, document the variable turn radii values used to the nearest one hundredth NM in the remarks section until Form 8260-9 has been revised to support this.

(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. 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 data 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 in accordance with Order 8240.47.

(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: e.g., **"VDP NOT ESTABLISHED – Obstacles penetrate 20:1 surface."**

(10) Enter a statement indicating the precipitous terrain evaluation has been completed: **"PRECIPITOUS TERRAIN EVALUATION COMPLETED."** This will be done even if adjustments are required and entered in Part A, 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/TF Leg turn computations for each and the variables used [Where VKTW=Velocity Knots Tailwind; TR=Turn Radius (NM) and BA = Bank Angle].

Examples:

RF SEGMENT	ALT	KIAS	KTAS	HAA	VKTW	TR	BA
CUKLI-LICIP	4000	250	270.21	3985.20	60.00	4.20	19.72

TF TURN FIX	ALT	KIAS	KTAS	HAA	VKTW	TR	BA
KINGR	4792	230	252.04	3543.2	55.43	4.25	18.00

(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. See Chapter 4, paragraph 499j for charting instructions.

(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 those 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. When feasible, provide a non-radar missed approach procedure. If sufficient space is not available, only the missed approach point data should be included and the missed approach instructions placed in the NOTES section or on the 8260-10 continuation sheet.

c. Approach Minimums. PAR and/or ASR minimums section must be completed as specified in paragraph 854. PAR w/out GS minimums may be established where necessary.

d. Radar Notes.

(1) Establish a FAF, minimum altitude (glidepath intercept altitude for PAR), and final approach course for each runway for which radar procedures are established. Runway designation may be omitted if only one runway has a radar approach.

(2) For ASR, provide recommended altitudes for each mile on final, but not below the lowest MDA.

Example Form 8260-4 entry:

"RWY 17: FAF 7.8 miles from threshold (at LACKI OM), minimum altitude 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 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, Jet, or colored airways. Do not establish a GNSS MEA on a Victor, Jet, 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 Rule-making (NPRM), and upon publication of the final rule, NFDC removes the affected airways from 14 CFR Part 95. Individuals completing this form remove or line through, as appropriate, the Form 8260-16 entries referenced in the final rule.

881.-889. RESERVED.

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
KTAS	knots true 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
NA	not authorized
N/A	not applicable
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

Figure A5-1

RADIO FIX AND HOLDING DATA RECORD

NAME: PROVIDENCE VORTAC **STATE:** RI **COUNTRY:** US

LATITUDE/LONGITUDE: 414327.64N/0713546.70W **TYPE:**

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** NO CHANGE

FIX MAKE-UP FACILITIES:

FAC	NAME	IDENT	TYPE	CLASS	MAG BRG	TRUE BRG	DME	DIST FROM FAC NM	DIST FROM FAC FEET	MRA	MAA
1	PROVIDENCE	PVD	VORTAC	H							45000

HOLDING: **HOLDING TYPE OF ACTION:** MODIFY

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	LEG LENGTH DME	HOLDING ALTITUDES MIN	HOLDING ALTITUDES MAX	TEMPLATES MIN	TEMPLATES MAX
1	S	PVD	VORTAC	181.00	001.00	R	1		1900	5000	4	5
2	N	PVD	VORTAC	344.00	164.00	R	1		3000	5000	4	5
3	NE	PVD	VORTAC	057.00	237.00	R	1 1/2		24000	39000	19	27
4	N	PVD	VORTAC	008.00	188.00	R	1		2100	10000	4	9
5	SW	PVD	VORTAC	234.00	054.00	R	1-1 1/2		11000	23000	9	19
6	SW		WP	235.41	055.41	R		8	11000	14000	9	10

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	200	200' AAO	414038.00N/0712947.00W	559	2C
2	200	TOWER (40-0125)	414812.00N/0713325.00W	1049	5D
4	200	TOWER (40-0125)	414812.00N/0713325.00W	1049	5D
5	230	TOWER (22-0325)	415213.00N/0711743.00W	1149	4D
6	230	TOWER (40-0113)	413423.00N/0713756.00W	851	2C

HOLDING RESTRICTIONS:
HOLDING LIMITED TO ESTABLISHED PATTERNS

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	LOGAN			BOS	BOSTON	MA
DP	WYLYY			BOS	BOSTON	MA
DP	BRADLEY			BDL	WINDSOR LOCKS	MA
DP	HANSCOM			BED	BEDFORD	MA
DP	BEVERLY			BVY	BEVERLY	MA
DP	NORWOOD			OWD	NORWOOD	MA
DP	LAWRENCE			LWM	LAWRENCE	MA
DP	STEWY			ACK	NANTUCKET	MA
EN ROUTE	V139		5			
EN ROUTE	V146					
EN ROUTE	V151					
EN ROUTE	V167					
EN ROUTE	V405					
EN ROUTE	V475					
EN ROUTE	J55		5			
EN ROUTE	J68					
EN ROUTE	J225					
IAP	ILS RWY 15R			BOS	BOSTON	MA
IAP	VOR/DME RWY 15R			BOS	BOSTON	MA
IAP	VOR/DME RWY 27			BOS	BOSTON	MA
IAP	VOR/DME RWY 33			BOS	BOSTON	MA
IAP	VOR/DME RNAV RWY 4R			BOS	BOSTON	MA
IAP	NDB RWY 32			1B9	MANSFIELD	MA
IAP	ILS RWY 5			EWB	NEW BEDFORD	MA
IAP	LOC BC RWY 23			EWB	NEW BEDFORD	MA
IAP	NDB RWY 5			EWB	NEW BEDFORD	MA
IAP	RNAV (GPS) RWY 5			EWB	NEW BEDFORD	MA
IAP	LOC RWY 22			UUU	NEWPORT	RI
IAP	VOR/DME OR GPS RWY 16		2	UUU	NEWPORT	RI
IAP	ILS RWY 16			OQU	NORTH KINGSTOWN	RI
IAP	VOR-A		4	OQU	NORTH KINGSTOWN	RI
IAP	VOR RWY 34			OQU	NORTH KINGSTOWN	RI
IAP	VOR/DME RNAV RWY 34			OQU	NORTH KINGSTOWN	RI
IAP	LOC RWY 35			OWD	NORWOOD	MA
IAP	VOR-A		1	SFZ	PAWTUCKET	RI
IAP	VOR-B			SFZ	PAWTUCKET	RI
IAP	RNAV (GPS) RWY 5			SFZ	PAWTUCKET	RI
IAP	ILS OR LOC/DME RWY 6			PYM	PLYMOUTH	MA
IAP	RNAV (GPS) RWY 6			PYM	PLYMOUTH	MA

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Figure A5-2

IAP	NDB OR GPS RWY 30		TAN	TAUNTON	MA
IAP	ILS OR LOC RWY 5		PVD	PROVIDENCE	RI
IAP	ILS OR LOC RWY 23		PVD	PROVIDENCE	RI
IAP	ILS RWY 5 CAT II		PVD	PROVIDENCE	RI
IAP	ILS RWY 5 CAT III		PVD	PROVIDENCE	RI
IAP	ILS RWY 34		PVD	PROVIDENCE	RI
IAP	VOR/DME RWY 16		PVD	PROVIDENCE	RI
IAP	VOR/DME RWY 23		PVD	PROVIDENCE	RI
IAP	VOR/DME RWY 34		PVD	PROVIDENCE	RI
IAP	VOR RWY 5		PVD	PROVIDENCE	RI
IAP	VOR RWY 34		PVD	PROVIDENCE	RI
IAP	RNAV (GPS) RWY 5		PVD	PROVIDENCE	RI
IAP	RNAV (GPS) RWY 16		PVD	PROVIDENCE	RI
IAP	VOR RWY 23		GON	GROTON (NEW LONDON)	CT
IAP	RNAV (GPS) RWY 23		GON	GROTON (NEW LONDON)	CT
STAR	GRAYM			BEDFORD	MA
STAR	NEWBE			NANTUCKET	MA
STAR	NORWICH	5	BOS	BOSTON	MA
STAR	SCUPP		BOS	BOSTON	MA
STAR	TEDDY			PROVIDENCE	RI
STAR	WOONS			BOSTON	MA

REQUIRED CHARTING: AREA, DP, EN ROUTE LOW, EN ROUTE HIGH, IAP, STAR

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 19 **DATE OF REVISION:** 03/14/2010

REASON FOR REVISION:
ADDED A TEMPLATE TO PAT 5, 265K HOLDING.
RAISED PAT 4, 200K MINIMUM HOLDING ALTITUDE.
ADDED HOLDING PAT 6.
CHANGED PAT 4, 230K CONTROLLING OBSTACLE.
CHANGED PAT 5, 265K CONTROLLING OBSTACLE.
UPDATED FIX USE.

ATC COORDINATION: **DATE:** 01/09/2010 **FACILITY:** ZBW **NAME:** MICK CONTROL

INITIATED BY: **DATE:** **ORGANIZATION:** **NAME:**

DEVELOPED BY: **DATE:** 03/14/2010 **OFFICE:** AVN-110 **NAME:** GARY GARMIN

APPROVED BY: **DATE:** 04/11/2010 **OFFICE:** AVN-110 **NAME:** MAXWELL MCDONALD

SIGNATURE:

DISTRIBUTION: **NFDC**
FIFO
FPO: BOS
ARTCC: ZBW
ATC FACILITY: PVD APP CON
OTHER:

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Figure A5-3

RADIO FIX AND HOLDING DATA RECORD

NAME: XMPLE **STATE:** TN **COUNTRY:** US

LATITUDE/LONGITUDE: 383338.31N/0873152.98W **TYPE:** INT, DME, WP, RADAR

AIRSPACE DOCKET: 06-AEA-0108 **FIX TYPE OF ACTION:** ESTABLISH

FIX MAKE-UP FACILITIES:

FAC	NAME	IDENT	TYPE	CLASS	MAG BRG	TRUE BRG	DME	DIST FROM FAC NM	DIST FROM FAC FEET	MRA	MAA
1	POCKET CITY	PXV	VORTAC	H	013.00	016.00	39.44	39.44		2000	17500
2	SAMSVILLE	SAM	VOR/DME	T	083.00	080.00		26.50		2000	17500
3	LAWRENCEVILLE	LWV	VOR/DME	T	165.79	164.75		12.99		2000	17500
4	MT CARMEL	AJG	NDB	MH	110.51	108.51		9.67		2000	17500
5	WASHINGTON	DCY	NDB	MH	248.71	246.71		20.44		2000	17500
6	BUG TUSSLE	I-BUG	LOC/DME		305.48	306.48	12.37	12.37		2000	6500

EXPANDED SERVICE VOLUME (ESV):

FAC IDENT	FAC TYPE	RADIAL/BEARING	DISTANCE	MIN ALTITUDE	MAX ALTITUDE
SAM	VOR/DME	R-083	27	2000	17500
LWV	VOR/DME	R-166	13	2000	17500

FIX RESTRICTIONS:
MCA V7 4500 NORTHBOUND
MRA V44 3000

HOLDING: **HOLDING TYPE OF ACTION:** ESTABLISH

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	LEG LENGTH DME	HOLDING ALTITUDES MIN	HOLDING ALTITUDES MAX	TEMPLATES MIN	TEMPLATES MAX
1	S	LWV	VOR/DME	165.79	345.79	L	1	4	5000	10000	4	4
2	NW	I-BUG	LOC/DME	305.48	125.48	L	1		2500	6000	4	5
3	NW		WP	305.48	125.48	R		4	2500	15000	4	12

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	175	ANTENNA (27-0038)	383346.19N/0873200.26W	772	3C
1	230	TOWER (27-1005)	383357.24N/0873255.39W	1035	4D
2	200	POWERLINE (27-2337)	383347.20N/0873155.87W	521	2C
3	200	POWERLINE (27-2337)	383347.20N/0873155.87W	521	2C
UPN	310	ANTENNA (KBUG0024)	383255.49N/0873126.05W	2345	1A

REASON FOR NONSTANDARD HOLDING:
PAT 1 TRAFFIC AVOIDANCE
PAT 2 AIR TRAFFIC BOUNDARY

HOLDING RESTRICTIONS:
PAT 1 CHART 175K ICON
UNPLANNED HOLDING AUTHORIZED AT OR ABOVE 3400
COORDINATE WITH INDIANAPOLIS ARTCC PRIOR TO HOLDING AT XMPLE

PROCEDURES REQUIRING CLIMB-IN-HOLD:

PAT	PROCEDURE TITLE	AIRPORT IDENT	CITY	STATE
PAT 1	NDB RWY 18	AJG	MT CARMEL	TN

REMARKS:
POCKET CITY (FAC 1) AND SAMSVILLE (FAC 2) USED TO ESTABLISH FIX COORDINATES.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	JETHRO	1, 2		BUG	BUG TUSSLE	TN
DP	BODINE RNAV			BUG	BUG TUSSLE	TN
EN ROUTE	V7	1, 2				

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Figure A5-4

EN ROUTE	V44	1, 2			
IAP	NDB RWY 18	1, 2, 3	1	AJG	MT CARMEL
TN					
IAP	NDB RWY 5	3, 5		DCY	WASHINGTON
TN					
IAP	ILS OR LOC RWY 13	1, 6	2	BUG	BUG TUSSLE
TN					
IAP	RNAV (GPS) RWY 13		3	BUG	BUG TUSSLE
TN					
STAR	CANNONBALL				PIXLEY
TN					

REQUIRED CHARTING: AREA, DP, EN ROUTE LOW, IAP, STAR

COMPULSORY REPORTING POINT: LOW

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 05/11/2010

REASON FOR REVISION:

ATC COORDINATION: **DATE:** 03/23/2010 **FACILITY:** CRC APP CON **NAME:** SEYMOUR PLANES

INITIATED BY: **DATE:** **ORGANIZATION:** **NAME:**

DEVELOPED BY: **DATE:** 05/11/2010 **OFFICE:** AVN-120 **NAME:** ACE TERPSTON

APPROVED BY: **DATE:** 06/14/2010 **OFFICE:** AVN-120 **NAME:** FRANK FAIRCHILD

SIGNATURE:

DISTRIBUTION: **NFDC**
FIFO
FPO: ATL
ARTCC: ZID, ZKC, ZMP
ATC FACILITY: CRC APP CON, AJG ATCT, BUG ATCT
OTHER: TN DOT, CITY OF BUG TUSSLE AVIATION AUTHORITY

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Figure A5-5

RADIO FIX AND HOLDING DATA RECORD

NAME: HOWTO **STATE:** MO **COUNTRY:** US

LATITUDE/LONGITUDE: 394700.16N/0945501.01W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

HOLDING: **HOLDING TYPE OF ACTION:** ESTABLISH

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	LEG LENGTH DME	HOLDING ALTITUDES MIN	HOLDING ALTITUDES MAX	TEMPLATES MIN	TEMPLATES MAX
1	NW		WP	347.08	147.08	R	1 1/2	4	3000	24000	5	17

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	200	TOWER (31-1165)	3948.00.34N/0945358.93W	2735	2B

HOLDING RESTRICTIONS:
HOLDING LIMITED TO ESTABLISHED PATTERN.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
IAP	RNAV (GPS) RWY 15		1	STJ	ST JOSEPH	MO
IAP	RNAV (GPS) RWY 33			STJ	ST JOSEPH	MO

REQUIRED CHARTING: IAP

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 01/12/2010

REASON FOR REVISION:

ATC COORDINATION: **DATE:** 11/01/2010 **FACILITY:** STJ APP CON **NAME:** ROGER OVER

INITIATED BY: **DATE:** **ORGANIZATION:** **NAME:**

DEVELOPED BY: **DATE:** 01/12/2010 **OFFICE:** AVN-130 **NAME:** LINDA LINEDRAWER

APPROVED BY: **DATE:** 02/29/2010 **OFFICE:** AVN-130 **NAME:** GREGORY GRUMMAN

SIGNATURE:

DISTRIBUTION: **NFDC**
FIFO
FPO: FTW
ARTCC: ZKC
ATC FACILITY: STJ APP CON,
OTHER: MO AVIATION DIRECTOR

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Figure A5-6

RADIO FIX AND HOLDING DATA RECORD

NAME: NITER OM **STATE:** TX **COUNTRY:** US

LATITUDE/LONGITUDE: 325423.25N/0965449.89W **TYPE:** INT, DME

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** MODIFY

FIX MAKE-UP FACILITIES:

FAC	NAME	IDENT	TYPE	CLASS	MAG BRG	TRUE BRG	DME	DIST FROM FAC NM	DIST FROM FAC FEET	MRA	MAA
1	NITER		OM		219.70	225.70		0.03		1900	5000
2	DALLAS	I-DAL	LOC/DME		309.64	315.64	5.59	5.59	33962	1900	5000
3	MAVERICK	TTT	VOR/DME	H	064.72	070.72		6.78		1900	5000

FIX RESTRICTIONS:
ILS Z RWY 13L, SPECIAL IAP, DAL, DALLAS, TX

REMARKS:
I-DAL DME LAT/LONG: 325025.01N/0965009.33W (DME SERVES RWY 13L & 31R)
COORDINATES REFLECT LOCATION ON LOC/AZ CENTERLINE ABEAM THE NITER OM. ACTUAL FACILITY LOCATION IS 325424.46N/0965448.42W.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
IAP	ILS RWY 13L	1, 2, 3		DAL	DALLAS	TX
IAP	ILS Z RWY 13L	1, 2, 3		DAL	DALLAS	TX

REQUIRED CHARTING: IAP

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 4 **DATE OF REVISION:** 01/03/2010

REASON FOR REVISION:
FAC 2 COURSE, DISTANCE, MRA AND MAA UPDATED.
FIX USE UPDATED.
LAT/LONG REVISED (MOVED 24 FT.)

ATC COORDINATION: **DATE:** 11/23/2009 **FACILITY:** DAL APP CON **NAME:** TIM MOVER

INITIATED BY: **DATE:** **ORGANIZATION:** **NAME:**

DEVELOPED BY: **DATE:** 01/03/2010 **OFFICE:** AVN-130 **NAME:** ROBERT ROCKWELL

APPROVED BY: **DATE:** 02/14/2010 **OFFICE:** AVN-130 **NAME:** BENJAMIN BOEING

SIGNATURE:

DISTRIBUTION: **NFDC**
FIFO
FPO: FTW
ARTCC: ZFW
ATC FACILITY: DAL ATCT, DFW ATCT
OTHER:

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Figure A5-7

RADIO FIX AND HOLDING DATA RECORD

NAME: THSWA **STATE:** OK **COUNTRY:** US

LATITUDE/LONGITUDE: 351401.94N/0972759.96W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
IAP	RNAV (GPS) RWY 3			OUN	NORMAN	OK
IAP	RNAV (GPS) RWY 21			OUN	NORMAN	OK

REQUIRED CHARTING: IAP

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 04/10/2010

REASON FOR REVISION:

ATC COORDINATION: **DATE:** 12/25/2010 **FACILITY:** OKC APP CON **NAME:** VICTOR VECTOR

INITIATED BY: **DATE:** **ORGANIZATION:** **NAME:**

DEVELOPED BY: **DATE:** 04/10/2010 **OFFICE:** AVN-110 **NAME:** RACHEAL RULEFOLLOWER

APPROVED BY: **DATE:** 07/21/2010 **OFFICE:** AVN-110 **NAME:** CHARLES CESSNA

SIGNATURE:

DISTRIBUTION: **NFDC**
FIFO
FPO: FTW
ARTCC: ZFW
ATC FACILITY: OKC APP CON, OUN ATCT
OTHER:

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APPENDIX 13.

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

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 A13-1 and A13-2). 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/FTP Latitude	11 characters	Alphanumeric
LTP/FTP Longitude	12 characters	Alphanumeric
LTP/FTP Ellipsoidal Height	6 characters	Signed Integer
FPAP Latitude	11 characters	Alphanumeric
FPAP Longitude	12 characters	Alphanumeric
Threshold Crossing Height (TCH)	7 characters	Alphanumeric
TCH Units Selector (meters or feet used)	1 character	Feet or Meters
Glidepath Angle (GPA)	4 characters	Unsigned Integer
Course Width at Threshold	5 characters	Unsigned Integer
Length Offset	4 characters	Unsigned Integer
Horizontal Alert Limit (HAL) (LPV Procedures)	3 characters	Numeric
Vertical Alert Limit (VAL) (LPV Procedures)	3 characters	Numeric

2. Fields needed for integrity monitoring, and calculated using binary representation of FAS Data Block (as described in RTCA/DO-229C, Minimum Operational Performance Standards for Global Positioning System/Wide Area Augmentation System Airborne Equipment and as amended by TSO-C146A).

Data Field	Field Size	Data Type
Precision Approach Path Point Data CRC Remainder	8 characters	Hexadecimal

3. Fields not included in the FAS Data Block, but needed for the Precision Approach Path Point record, and which are not CRC wrapped.

Data Field	Field Size	Data Type
ICAO Code	2 characters	Alphanumeric
LTP Orthometric Height	6 characters	Signed Integer
FPAP Orthometric Height	6 characters	Signed Integer
Horizontal Alert Limit (HAL) (LAAS procedures)	3 characters	Numeric
Vertical Alert Limit (VAL) (LAAS procedures)	3 characters	Numeric

4. Explanation of data field entries (in the general order they appear in the FAS Data Block):

a. Operation Type. A number from 0 to 15 that indicates the type of the final approach segment.

Example:

0 is coded for a straight-in and offset approach procedure.

b. SBAS Service Provider Identifier. A number from 0 to 15 that associates the approach procedure to a particular satellite based approach system service provider. For GBAS applications, this data is ignored.

Example: 0 (WAAS)

c. Airport Identifier. The four-character ICAO location identifier assigned to an airport. Where there is a national airport identifier but no ICAO location identifier, the three- or four-character national identifier is used. Where only three characters are provided, the trailing space is to be left blank.

Example:

KDEN, YSSY, NZWN, FAEL, 3SL_, OH23

d. Runway. Runways are identified by 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)/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)/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/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, table 18A.

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.

xample:

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 A11-1 and A11-2).

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 A11-3. 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 developed using Order 8260.50 is a fixed value at 40.0 meters.

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

Example: HAL 40.0

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 ft or greater. If an LPV procedure has been established to support a HATh/HAT less than 250 ft (no less than 200 ft), a VAL of 35 meters will be used.

Note 1: A VAL of 00.0 indicates that the vertical deviations should not be used (i.e., a lateral-only {LP} approach).

Note 2: A VAL is not part of the FAS data block/CRC wrap for LAAS procedures.

Example:

VAL 50.0 VAL 35.0

Figure A13-1.

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION RNAV (GPS) **INSTRUMENT APPROACH PROCEDURE** FLIGHT STANDARDS SERVICES TITLE 14 CFR PART 97.33	Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

FAS DATA BLOCK INFORMATION

DATA FIELD	DATA
OPERATION TYPE	0
SBAS SERVICE PROVIDER IDENTIFIER	0
AIRPORT IDENTIFIER	KTXK
RUNWAY	RW13
APPROACH PERFORMANCE DESIGNATOR	0
ROUTE INDICATOR	
REFERENCE PATH DATA SELECTOR	0
REFERENCE PATH IDENTIFIER (APPROACH ID)	W13A
LTP/FTP LATITUDE	332731.8700N
LTP/FTP LONGITUDE	0935931.8200W
LTP/FTP ELLIPSOIDAL HEIGHT	+00834
FPAP LATITUDE	332628.7500N
FPAP LONGITUDE	0935816.5200W
THRESHOLD CROSSING HEIGHT (TCH)	00054.0
TCH UNITS SELECTOR (METERS OR FEET USED)	F
GLIDEPATH ANGLE (GPA)	03.00
COURSE WIDTH AT THRESHOLD	106.75
LENGTH OFFSET	1360
HORIZONTAL ALERT LIMIT (HAL)	40.0
VERTICAL ALERT LIMIT (VAL)	50.0
CRC REMAINDER	1E25CEDC

ADDITIONAL PATH POINT RECORD INFORMATION

ICAO CODE	K4
LTP ORTHOMETRIC HEIGHT	+01103
FPAP ORTHOMETRIC HEIGHT	+01103

CITY AND STATE	ELEVATION: 390 TDZE: 387 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
TEXARKANA, AR	TEXARKANA REGIONAL-WEBB FIELD	RNAV	RNAV (GPS) RWY 14, ORIG	AMDT: NONE
				DATED:

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Figure A13-2.

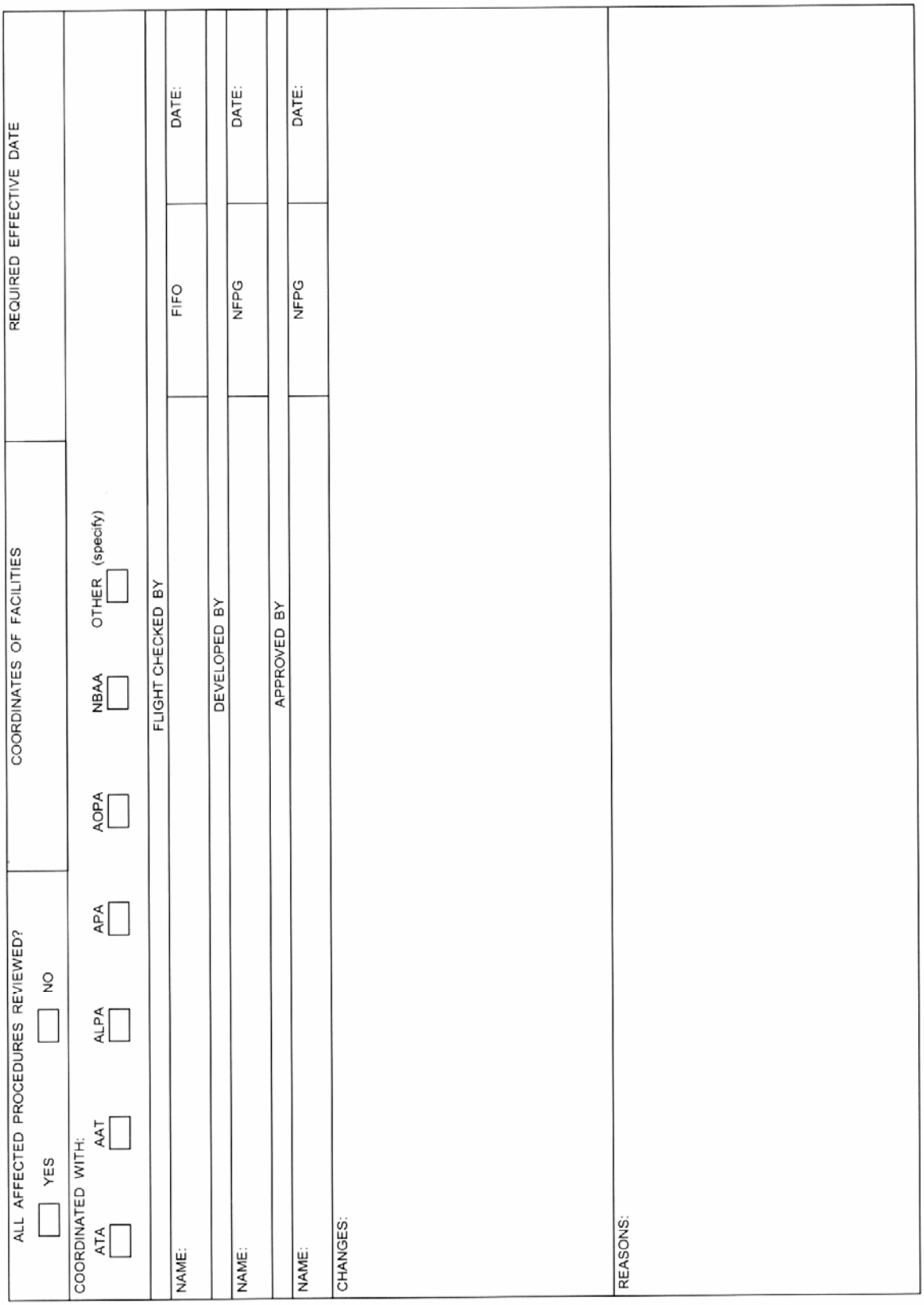
ALL AFFECTED PROCEDURES REVIEWED?
YES
NO
COORDINATES OF FACILITIES
REQUIRED EFFECTIVE DATE
COORDINATED WITH:
ATA
AAT
ALPA
APA
AOPA
NBAA
OTHER (specify)
FLIGHT CHECKED BY
NAME:
FIFO
DATE:
DEVELOPED BY
NAME:
NFPG
DATE:
APPROVED BY
NAME:
NFPG
DATE:
CHANGES:
REASONS:

Figure A13-3. ICAO Code Numbers